Paper Investment for Profit

WHO are the successful corporations in this country? Those who are making money!

Millions of people in these United States scan the financial columns of our papers and literally devour the reports put out by financial institutions, telling of the earning powers of this or that corporation. They are seeking investing information. They want to know who is making money, and what the prospects are for dividends.

Money is plentiful in America. It is seeking investment, for profit. Therefore, the yardstick by which investors measure investing desirability, is the amount of earnings an industry or corporations in an industry are making.

The automobile industry is prosperous. The General Motors Corporation reported earnings of $93,200,000 for the first six months of 1926. Record-breaking earnings! The announcement of same sent the company's stock to $200 a share inside of a week. That's what profitable operations do for investors in a profitably-managed corporation.

Then the steel business is profitable. The U. S. Steel Company reports earnings of $92,800,000 for the first six months of 1926. This announcement sent that company's shares up to the record price of $150.00, bringing millions of added wealth to tens of thousands of stock-holders.

We look in vain for reports of profitable operations from representative companies in the paper business. They are not! Such profitable reports are conspicuous for their absence. Why? Why is it that representative corporations in the giant paper industry are not reporting fine profits and good earnings?

The paper industry is expanding. Paper is a fundamental, essential commodity. Every business house, every home, every individual in the country uses quantities of paper every day. The per capita consumption is growing. The tonnage demand is up in the millions, and yet as the writer sadly noted recently, when interviewing a prominent producer, there was an absence of pride in the announcement by the head of the firm, that although the first six months' operations this year showed 20 per cent increase in tonnage billed out, "there was no profit to speak of!"

No profit? What is the purpose of all industrial investment? Profit! How does it come to pass that one paper producer after another reports bigger business but no profit?

In our humble judgment the fault lies with the directors, stock-holders and bankers connected with these various paper corporations. Why do these stock-holders and bankers permit continuous operations to be carried on, showing no profit?

There is no good reason why paper production should not show a profit on each ton produced, just as each automobile or ton of steel shows a profit. The way to make a profit is to refuse to sell a ton of paper that does not show a profit.

The paper industry needs to learn that lesson. Don't say, "It can't be done." It can, and what's more, it is being done by gritty, intelligently-managed concerns here and there in the industry.

This is the era of profit. Money invested in auto factories, iron and steel mills, or paper production must show a profit. Profit is to industry what blood is to the human body. Industry cannot continue to succeed except it has profit.

The paper industry should be a most profitable industry. It can be made the equal of any other industry in profits produced. It needs the attention of stock-holders, investors, directors and bankers, who demand that all operations show a profit.

Paper and profit can become synonymous terms.

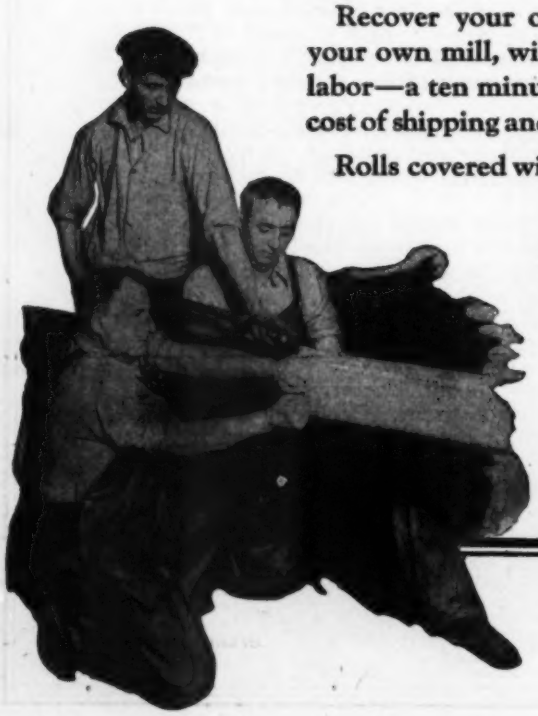
Save YOUR FELTS *and* WIRES *with* Goodrich *Slip-Sleeves*

WHEN rubber covered felt and tube rolls were accepted as better than wood, iron or brass, Goodrich began experimenting to find a way to reduce the cost of recovering rolls. The Slip-Sleeve is the result.

Recover your own rolls, in your own mill, with your own labor—a ten minute job. Save cost of shipping and delay.

Rolls covered with Goodrich Slip-Sleeves in continuous service nearly two years have proven absolutely satisfactory—tight and firm as when applied; no indication of loosening, creeping, roughening, pitting or other wear.

And the first cost is so low compared to old methods of rubber covering that the entire wet end of your machine can be equipped at the price formerly paid for a few rolls.



This is the announcement Paper Mill Superintendents have been awaiting for years. Take full advantage of it.

THE B. F. GOODRICH RUBBER CO.

Akron Atlanta Boston Buffalo Chicago Dallas
Denver Detroit Kansas City Los Angeles New York
Philadelphia San Francisco Seattle

The Passing of a Great Leader

"It isn't what we do that counts—
"How well we do is vital."

THAT success will attend the efforts of one who follows this admonition from the pen of Douglas Malloch, has been conclusively proved in the life of Charles A. Coffin, who made a success early in life as a shoe manufacturer and then entered an unfamiliar field of endeavor and contributed a great share in making the electrical industry what it is today.

Charles A. Coffin, founder and for thirty years head of the General Electric Company as president and chairman of the board of directors, died Wednesday night, July 14, 1926, at his home, Locust Valley, Long Island.

Up to within two weeks before his death, Mr. Coffin had been regularly to his office in New York and continued his active interest in the progress of the electrical industry and more particularly the General Electric Company of which he was a director.

Leaders of the great industries, educators, and heads of charitable institutions, were to be found daily in his office, securing his inspiration and advice in dealing with the problems of the organization whose destinies they directed.

During the very last days of his life much of his time was devoted to the charities he had always liberally but quietly supported.

Charles Albert Coffin was for thirty years the financial and commercial genius of the General Electric Company. Prior to the formation of that company, in 1892, Mr. Coffin was a dominant influence in the Thomson-Houston Electric Company, one of the predecessors of General Electric. Yet he began life as a shoe manufacturer, with no thought whatever of entering the field of electrical development.

He was born in December, 1844, in Somerset County, Maine, and graduated from Bloomfield (Me.) Academy. Showing a marked capacity for mercantile activity, he went to Boston as a young man and became interested in the shoe and leather industry. He met Micajah P. Clough, who was interested in the same trade, and together they formed the firm of Coffin & Clough and established a factory at Lynn, Mass., one of the largest shoe manufacturing centers in the world.

Until 1883 Mr. Coffin was a capable and prosperous shoe manufacturer. In that year Silas A. Barton, a Lynn printer and stationer, interested him in the formation of a syndicate for the purchase of the American Electric Company of New Britain, Conn., a small and struggling concern, the head of which was Prof. Elihu Thomson. Associated with him was Edwin Wilbur Rice, Jr. The Lynn Syndicate, as it was known, purchased control of this little company, whose annual net profits at that time were less than $20,000, and moved it to Lynn in the latter part of 1883, where a factory was leased on Western Avenue. The name was changed to the Thomson-Houston Electric Company in honor of Professor Thomson and his early associate, Professor Edwin J. Houston.

Mr. Coffin knew very little about electrical matters, but he interested himself keenly in the work of Professor Thomson and Mr. Rice. As the affairs of the company developed, he took a dominant part and became vice-president and treasurer.

It was through his leadership that the company developed the central station idea as applied to arc lighting, and in 1888 he induced the company to enter the electric railway field, manufacturing equipment for electric street car lines in many parts of the country. A number of other electrical concerns were absorbed, most notable among them being the Brush Electric Company of Cleveland.

In 1892 occurred the consolidation of the Thomson-Houston Company and the Edison General Electric Company of New York, in which all the activities and interests of Thomas A. Edison's incandescent lamp development had previously been merged. Mr. Coffin and the Thomson-Houston Company were the dominant influences in this amalgamation.

When the consolidation was consummated in April, 1892, under the name of General Electric Company, Mr. Coffin was immediately elected president. For the succeeding 21 years he was at the helm of the new concern, which became the leading electrical company in the United States.

The growth of the General Electric Company under Mr. Coffin's leadership during the three decades that he was either president or chairman of the board was little less than phenomenal. He saw the company develop and made accessible to the American public every imaginable variety of electrical apparatus for the generation, transmission, distribution and control of electricity. He saw it make possible a tremendous expansion in central station companies, serving directly the people of communities large and small.

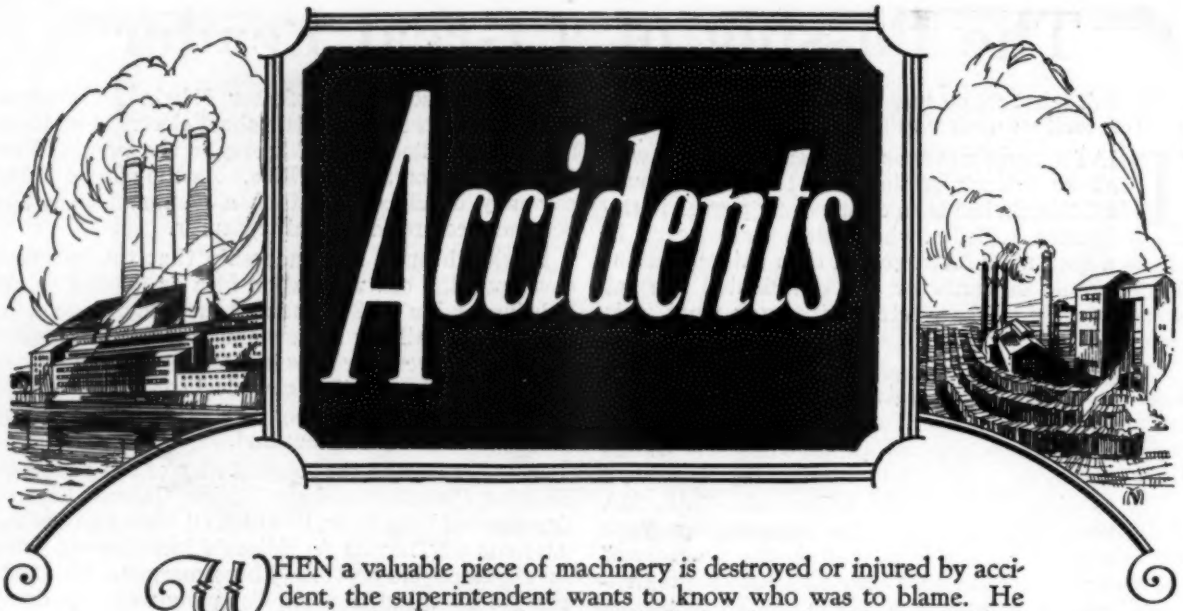
Mr. Coffin's unshakable faith in the future and the value of electricity to the people was indicated in a newspaper interview which he granted in 1922—one of the few interviews, if not the only one, he ever gave out.

The striking passage in that interview was his forecast as to what electricity might do in future years.

"The next great social change as I see it," he said, "is decentralization. Electricity made the big city. Now it may be expected to unmake it. All the advantages of the city will soon be possible on the farm without having to put up with the unendurable iniquities of city life.

"Electricity is not only the cleanest and most efficient servant that mankind has ever had—it is also the cheapest. It works for less than a coolie's wage, and its wages are going down every day, while its efficiency is being constantly increased. In addition to this it does its own traveling at the rate of 186,000 miles a second and doesn't have to be transported.

"Of one thing only I am certain—that is, that we are just at the beginning of the electric age."



WHEN a valuable piece of machinery is destroyed or injured by accident, the superintendent wants to know who was to blame. He knows that few accidents can really be classed as "unavoidable." But when a machine is injured or temporarily rendered useless by the premature wearing out of a bearing, no investigation is made, as a rule. It is taken for granted that machinery must wear out. If it wears out sooner than it should, it's just bad luck—or if anybody is to blame, it is the maker of the machine.

Some day, perhaps, knowledge of the science of lubrication will be so general that the premature wearing out of machinery will be looked upon in its true light—as an accident which could easily have been avoided by the more careful selection of lubricants.

Meantime, plant superintendents who have familiarized themselves with this modern science are saving money for their companies by using the correct grades of

Standard Oils and Greases

Standard Oils and Greases are made in many grades to meet the lubrication requirements of every kind of machinery in use in modern industrial plants.

Our representative will recommend the grades of lubricants which will help to eliminate avoidable "accidents" of this kind in your plant.

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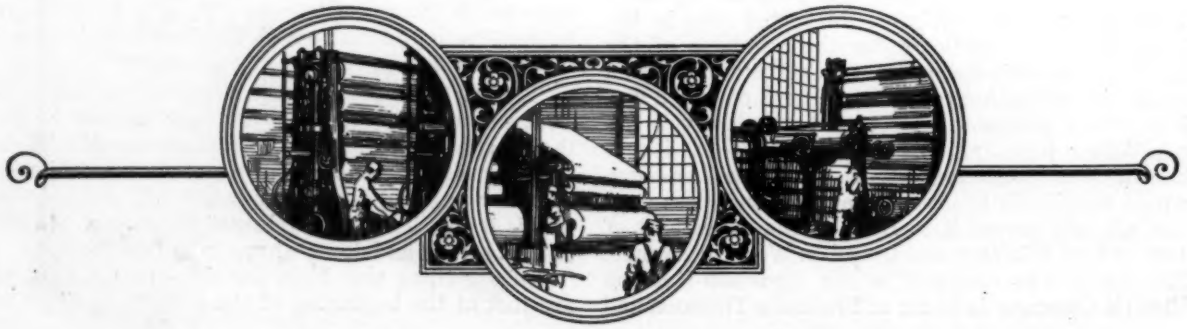


THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 8 AUGUST, 1926 No. 5

Factors Determining the Location of Pulp and Paper Mills

Part I—Sketch of Industry's Growth and a Study of Water Supply

By HARRY E. WESTON

Associated with Thomas H. Savery, Jr., Chicago; Formerly Assistant Professor of Pulp and Paper Manufacture, The New York State College of Forestry, Syracuse, N. Y.

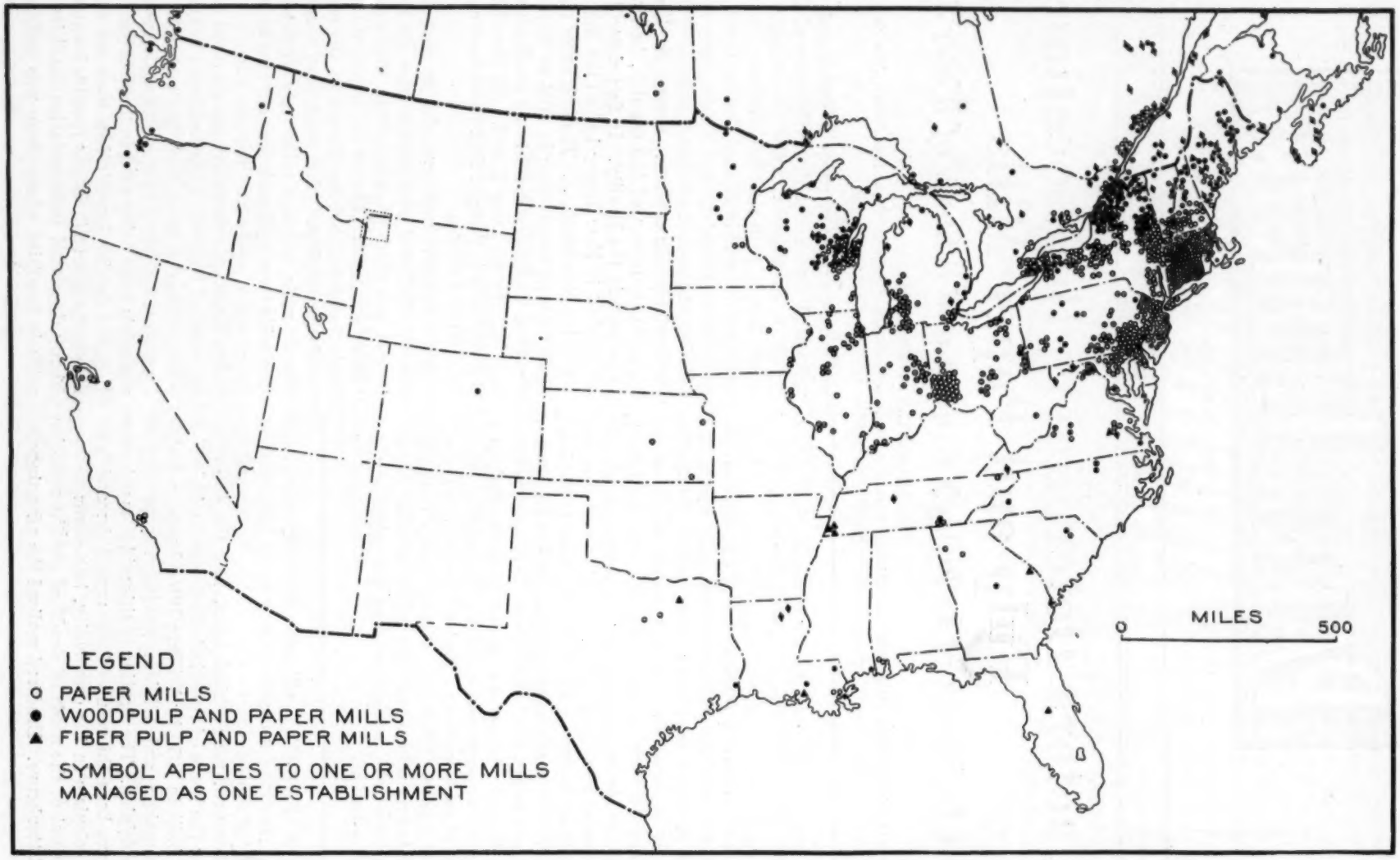
In general, the term pulp signifies to the trade a product derived from wood as a raw material. When spoken in conjunction with the word "paper" as "pulp and paper" the term probably would be commonly interpreted as paper produced from pulp which had been prepared previously from wood. With this thought in mind the following article has been developed in such manner that the text is limited largely to the most important factors involved in the location of wood pulp and paper mills, and does not include an analysis of conditions peculiar to the location of other types of paper mills, such as rag, straw, rope, old paper, etc. In the main, however, the location of such enterprises should be controlled by a study of the same major factors, the relative importance of each probably differing somewhat in the different grades. Therefore, it is necessary to analyze such factors with knowledge of the peculiar characteristics of the product or products which are desired.—Author.

AN INDUSTRY will grow naturally out of the needs of a community or of an individual or group of individuals within a community. Roxborough, near Philadelphia, had the honor of being the home of America's first paper mill, which was built in 1690 by William Rittenhouse, a Dutch papermaker, and William Bradford, a printer of Philadelphia. The starting of this mill does not seem to have been the result of any urgent demand from the colonists in the community, but seems to have come out of the needs of Bradford and the ambition of Rittenhouse. Bradford realized the advantage of a constant supply of paper at hand, and was very influential throughout the early years of the industry in its development. The second paper mill was established in 1710 near Germantown, Pennsylvania, and the third mill in 1729 at Chester Creek, about 20 miles from Philadelphia. These three small mills constituted the entire industry until near the middle of the eighteenth century. Boston, the literary and typographic center of the country, had as yet no paper mill in the locality. In fact a small mill was established in New Jersey before the first mill was started in New England. The first paper mill in New England began operations in 1728 at Milton, Massachusetts, while New York State established its first mill in 1768 on Long Island. At the close of the Revolution is is thought that there were about 80 or 90 mills in America.

Even though improvements in machinery and processes followed immediately after the Revolution, it was not until the Civil War that any marked change was noted. During the period of the war the trade fluctuated, but by the end of the conflict was developing rapidly. New machinery was placed in the old mills, and new mills were established. The new mills were built on larger streams to insure sufficient water power for their operation.

The location of these enterprises could not be left, as many of the older mills had been, to chance, personal opinion or guesswork, but had to be governed by a careful study of various economic factors. New materials were being used to help out the rag situation, and foreign importations were not sufficient to supply the demand. It was possible because of more highly developed transportation facilities to group mills in localities where there was sufficient water

PAPER AND PULP MILLS OF THE UNITED STATES, 1922


LEGEND
PAPER MILLS
WOODPULP AND PAPER MILLS
FIBER PULP AND PAPER MILLS
SYMBOL APPLIES TO ONE OR MORE MILLS MANAGED AS ONE ESTABLISHMENT
0 MILES 500

power and an adequate supply of raw material because of the accessibility of markets.

An examination of any manufacturing country will show that its industries tend to localize or concentrate. In this way industrial centers or localities devoted to the production of a limited line of products are developed. This is particularly true of the pulp and paper industry. Such concentration of industry tends toward bigger mills with the natural result of increased production and large initial investments. Such investments influence the advisability of locating a plant within any region or locality. Once the decision is made and the plant established, because of the large initial investment the decision is in most cases unalterable. Likewise, the cost of moving a plant would often prove prohibitive.

Another important characteristic of industry is its tendency to migrate. It naturally tends to some extent to follow the markets. The trend of manufacturing geographically should be carefully considered in locating a new plant or in moving an old one. The U. S. Census of Paper Mill Statistics, Table 1, indicates how the industry developed and in what states was the greatest growth for the years 1860, 1870 and 1872.

TABLE I

UNITED STATES CENSUS PAPER MILL STATISTICS

Compiled for Lockwood's Directory

Number of Mills:	1860	1870	1872
Alabama	...	1	1
California	1	2	4
Connecticut	55	66	76
Colorado	...	1	1
Delaware	2	1	3
District of Columbia	...	1	1
Georgia	4	5	6
Illinois	2	19	21
Indiana	10	17	16
Iowa	1	5	5
Kentucky	1	2	4
Louisiana	...	...	1
Maine	14	12	33
Maryland	25	26	28
Massachusetts	99	95	134
Michigan	5	11	16
Minnesota	...	2	2
Missouri	...	1	1
New Hampshire	24	32	33
New Jersey	36	32	36
New York	126	179	190
North Carolina	6	5	6
Ohio	29	44	47
Oregon	...	1	1
Pennsylvania	84	78	93
Rhode Island	...	1	...
South Carolina	3	2	2
Tennessee	2	3	3
Utah	...	1	...
Vermont	12	12	24
Virginia	9	4	6
West Virginia	...	4	6
Wisconsin	5	6	12
Total	555	669	812

Total in 1850—443.

An overwhelming increase in the output of paper and a corresponding increase in demand resulted from the perfection of the wood pulp processes. Considerable development took place between 1860 and 1870. There was an increase in the number of mills from 555 in 1860 to 669 in 1870. New York, Pennsylvania, Massachusetts and Connecticut maintained the same relative positions in 1870 as in 1860. Ohio came fifth with a list of 44 mills. The principal establishments during this period, 1860-1872, were in New England, New York, New Jersey and Ohio, with a few important plants in the South, Middle West and Northwest. Unfortunately, all of the mills in these statistics are grouped, and there is no way to differentiate between the paper mills and the several varieties of pulp mills.

Table 2, compiled from Lockwood's Directory for 1926, shows the present distribution of the industry within the United States.

TABLE 2

PRESENT DISTRIBUTION OF PULP AND PAPER MILLS WITHIN THE UNITED STATES AND ITS POSSESSIONS (1926)

Location	No. of Paper Mills	No. of Pulp Mills Whether Connected with Paper Mills or Not	No. of Ground Wood Mills	No. of Sulphite Pulp Mills	No. of Soda Pulp Mills	No. of Sulphate Pulp Mills
Alabama	1	0	0	0	0	0
Alaska	0	1	1	0	0	0
California	12	2	1	1	0	0
Colorado	1	1	1	0	0	0
Connecticut	43	0	0	0	0	0
Delaware	8	1	0	0	1	0
District of Columbia	1	1	0	0	1	0
Georgia	3	1	0	0	0	1
Hawaiian Islands	1	0	0	0	0	0
Illinois	31	0	0	0	0	0
Indiana	31	0	0	0	0	0
Iowa	5	0	0	0	0	0
Kansas	3	0	0	0	0	0
Louisiana	10	6	0	0	0	6
Maine	30	45	23	15	5	2
Maryland	11	2	0	0	2	0
Massachusetts	107	5	2	2	1	0
Michigan	57	14	4	7	0	3
Minnesota	8	11	7	2	1	1
Mississippi	1	1	0	0	0	1
New Hampshire	31	10	5	5	0	0
New Jersey	43	1	0	0	1	0
New York	160	84	62	18	4	0
North Carolina	4	4	0	1	1	2
Ohio	55	2	0	1	1	0
Oregon	4	7	3	4	0	0
Pennsylvania	71	16	2	4	9	1
Rhode Island	1	0	0	0	0	0
South Carolina	2	2	1	1	0	0
Tennessee	3	1	0	0	1	0
Texas	2	1	0	0	0	1
Vermont	17	6	6	0	0	0
Virginia	12	9	2	1	3	3
Washington	9	12	6	5	1	0
West Virginia	6	3	1	2	0	0
Wisconsin	59	56	28	22	0	6
Total in United States	844	305	155	91	32	27

The most important pulp and paper mill districts in the United States are north of the 42° latitude. In fact the districts may be divided into the following groups: New England, New York, Great Lakes (Michigan, Wisconsin and Minnesota) and the Northwest (Washington and Oregon). These areas contain the greatest number of mills within the country and produce the largest portion in tone and value of the country's output.

Recently there has been a marked tendency for the industry to develop southward. Some of this development has been due to the adaptability of the sulphate process to the pulping of southern woods and particularly the southern pines. The general industrial expansion of the South may, likewise, have been responsible for some of the growth. The Pacific coast has also seen considerable expansion of the pulp and paper industry within the past few years. This region contains over 50 per cent of the remaining or

virgin stand of timber in this country, and this factor alone may influence capital to locate plants within the area.

The successful location of any of the mills in the various districts is dependent upon a study of a number of factors. In the promoting of any industry, many factors peculiar to the industry present themselves for solution. Due to the varied conditions which influence the development of a pulp and paper enterprise, a large amount of data must be collected and studied before such a project could be properly undertaken. A few of the most important factors which would necessarily have to be considered in this study if a mill were to be located successfully are:

1—Water supply; 2—Raw material; 3—Transportation facilities; 4—Markets; 5—Power; 6—Labor Supply; 7—Disposal of waste material.

Water Supply

Water supply is probably the most important individual factor. Water may be classified as rain, surface and ground waters. Rain water, on account of the small amount available, is of no practical importance to the pulp and paper maker. It is, therefore, necessary to get such a supply as needed from surface or ground waters. Surface waters are usually considered as the waters of brooks, rivers, lakes and ponds. Ground waters are those of springs or those released by drilling as in the various types of wells.

Courtesy, C. E. Libby

A potential water supply for pulp and paper manufacture

Surface waters usually pick up impurities of many kinds. These impurities are dependent upon the type and nature of the soil over which the waters flow. Contamination of water from mineral substances often takes place. Generally speaking, surface waters usually contain less mineral matter than ground water, but a greater amount of organic matter. There are often impurities in suspension in the water which determine its feasibility for use in pulp and paper manufacture. These impurities are sometimes caused by the pollution of the supply by other mills located in the vicinity.

Ground waters are usually clear and colorless, but contain more dissolved matter than do surface waters. They also maintain a more uniform temperature throughout the year. This temperature is often of great importance in industrial work.

Soft water is generally considered best for pulp mill operations. It is desirable for washing pulp stock since it has a much greater solvency power than that of hard water. Likewise, hard water might cause difficulty in the bleaching of pulp or, in some cases, it might even affect the coloring and sizing of paper.

Another essential feature to be considered in the use of any supply of water for pulp and paper mill operations is color. Surface waters show variations from colorless to the deep brown of swamp waters. Pure natural waters are usually clear and colorless.

The United States Geological Survey has made studies of a number of the river and lake waters of the United States. In these studies they have generally sampled and analyzed the various waters in such a way that an average composition of a supply over a one-year period could be obtained. Daily samples, as a rule, were taken from many of the supplies. These samples were mixed in sets of seven or ten and analyzed. Monthly samples were taken from the Great Lakes since there is comparatively little variation in these waters. The analytical procedure was even more exacting in the case of the waters of some of the larger streams. The Mississippi, for example, was sampled at several different points.

Such study indicates the variation in composition of river water from time to time and place to place, as well as between times of flood and times of drought. Seepage from river banks might also prove to be an important consideration.

Table 3 records in percentages the average composition of the total anhydrous inorganic solids of the river and lake waters of North America, excluding those of closed basins.

Since an analysis expressed in these terms would give only the relative proportions of the reported constituents of the water, and because of the wide variation in proportion of total solids to volume, or as it is commonly expressed, parts per million, it seems best to express an analysis both in parts per million and in percentage. Such a double form of statement would be particularly desirable in recording the analysis of very dilute waters.

For example, the two sections in Table 4 include

the results of analyses expressed in both forms of several waters in western Maine.

It is axiomatic that water which is to be used in the various pulp and paper processes should be analyzed by a competent chemist prior to the final decision as to the location of the plant. In this study samples should be collected at various times during the year for analysis. The number of samples taken

TABLE 3
Average composition of North American Waters[1]

CO_3	33.40	Mg	4.87
SO_4	15.31	Na	7.46
Cl	7.44	K	1.77
NO_3	1.15	$(Fe, Al)_2O_3$	.64
Ca	19.36	SiO_2	8.60

[1] United States Geological Survey, Professional Paper 135.

and analyzed would depend very much on the nature of the enterprise. The requirements of blottings, bonds, ledgers, etc., would be more exacting under ordinary circumstances than those of boards. Very hard water used in the manufacture of blotting would make it difficult to manufacture a sheet which would not lose its absorbency. Similarly, the action of rosin size and alum would be greatly influenced by the hardness of the water. In some instances it is necessary to add much more alum than would ordinarily be required if the water were of the proper analysis.

It is not only essential to ascertain the quality of water for the proposed site of a mill, but it is also

TABLE 4
I—PARTS PER MILLION

	1	2	3	4	5	6
CO_3	5.4	6.4	5.9	4.43	9.8	4.08
SO_4	2.1	7.8	2.2	9.3	12.0	6.4
Cl	2.0	.3	2.1	.9	2.3	.8
NO_3	Tr.	Tr.	Tr.	Tr.	....	Tr.
Ca	2.2	4.2	2.4	3.6	7.4	3.0
Mg	.3	1.4	.3	1.4	1.1	.9
Na	1.8	1.4	1.9	1.3	2.5	1.8
K	.6	.7	.7	.5	1.0	.7
Fe_2O_3	.2	.3	.3	.37	3.2	.42
SiO_2	1.4	3.3	2.2	4.0	9.0	5.9
	16.0	25.8	18.0	25.8	48.3	24.0

II—PERCENTAGE COMPOSITION OF DISSOLVED SOLIDS

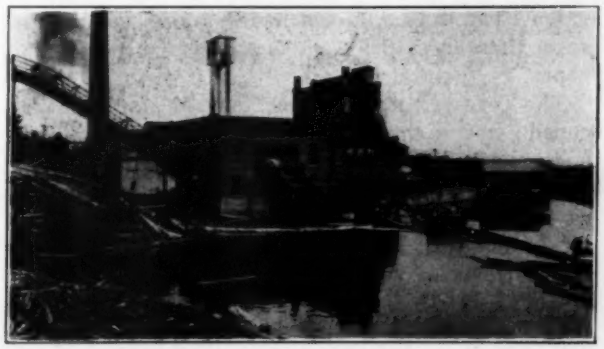
	1	2	3	4	5	6
CO_3	33.75	24.80	32.78	17.17	20.29	17.01
SO_4	13.13	30.23	12.22	36.05	24.85	26.67
Cl	12.50	1.16	11.67	3.48	4.76	3.33
NO_3	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.
Ca	13.75	16.28	13.33	13.95	15.33	12.48
Mg	1.87	5.43	1.67	5.43	2.27	3.75
Na	11.25	5.43	10.55	5.04	5.17	7.50
K	3.75	2.72	3.89	1.94	2.07	2.92
Fe_2O_3	1.25	1.16	1.67	1.44	6.63	1.75
SiO_2	8.75	12.79	12.22	15.50	18.63	24.59
	100.00	100.00	100.00	100.00	100.00	100.00

1. Moosehead Lake at head of Kennebec River.
2. Kennebec River at Waterville.
3. Rangeley Lake at head of Androscoggin River.
4. Androscoggin River at Gorham, N. H.
5. Androscoggin River at Brunswick.
6. Saco River at Cornish.

These data were obtained from Professional Paper 135, U. S. Geological Survey.

essential to know the quantity that is available. The volume of water that would be available for use would aid in the determination of the size of plant to be erected. Great care should be exercised in calculating the water flow since it would be an easy matter in some cases to erect a plant of such capacity that the water supply would be insufficient to meet its actual requirements. The quantity of water used in the manufacturing operations would be dependent upon the kind of pulp or paper being manufactured, and varies even in different plants manufacturing the same line of products. Engineers commonly estimate 50,000 gallons per ton of groundwood, 75,000 gallons per ton of unbleached chemical pulp, and 100,000 gallons per ton of bleached chemical pulp.

Measurements obtained from a well-known paper



Modern newsprint mill, showing how site is chosen in proximity of water in the location of mill

company show the following distribution in the use of fresh water in their sulphate pulp mill:

		Cu. ft.
Caustic Room	Tank wash	14,000
	Filter wash	3,000
Diffusers (12)	Black liquor dilution	5,400
	Left in stock 11%	24,600
	Washing out	88,000
Screens	Fresh water 22% of total	125,000
(White water about 450,000 cu. ft. daily)		
Recovery Room	Nozzle cooling water	50,000
Evaporator Room	Condenser water	107,000
Digester Room	Hose	12,000
		429,000

This quantity of water, considering the pulp production, equals approximately 40,000 U. S. gallons per ton of pulp.

Another plant reports the use of approximately 3,000 cubic feet, or 22,500 gallons, per ton of sulphate pulp, with the consumption for the different operations being distributed approximately as follows:

	Cu. ft. per ton
Causticizing	200
Vacuum Evaporator	1,800
Diffuser (Wash Tank Department)	1,000
	3,000

The consumption of water in the paper mill, as in the pulp mill, depends to a considerable extent upon the product that is manufactured. In a rag mill

manufacturing fine papers, and where it is necessary to wash the stock for a long time, the consumption of water per ton of finished paper is very high. Witham[2] mentions a mill of his acquaintance which produces 25 tons of finished paper per day from rags, purchased pulp, etc., that is using approximately 4,500,000 gallons per day. Such a plant would require, therefore, approximately 180,000 gallons per ton. He also mentions a plant producing 125 tons of unbleached sulphite per day, as well as 80 tons of bag and wrapping paper that is using 15,000,000 gallons of water per day for all purposes. Estimating 50,000 gallons per ton of unbleached sulphite would leave approximately 110,000 gallons of water per ton of paper.

The Forest Products Laboratory, at Madison, Wisconsin, has co-operated with a number of mills in a study of white water losses.[3] In this study it is not possible for them as yet to give data relative to actual savings in water consumption and fiber losses caused by the installation of pulp saving equipment and the recirculation of white waters. This information is not available since the mills co-operating with them do not seem to have data covering the consumption of water in their original procedure. One book mill, however, utilizing well water in the manufacturing operations since the installation of pulp saving equipment, has been able to shut down three out of four wells, and the fourth is now in use only part of the time. It is seen that there must be an enormous saving in water volume per ton of finished paper.

Reports to the laboratory also show that there are wide variations in the quantity of water used on the same grade of paper. One book mill, for instance, reports 2,690 gallons of water per ton, with a machine efficiency at 98½ per cent, while a second mill reports 30,000 gallons per ton with a machine efficiency at 96.9 per cent.

The reports, likewise, show variations in the consumption of water in board mills from 7,350 gallons per ton of paper to 28,000 gallons per ton with the efficiency of machine operation varying from about 90 to 99 per cent. Figures vary from 2,500 gallons to 26,000 gallons of water per ton of newsprint, while in mills manufacturing catalog papers the consumption of water varies from 13,000 to 38,000 gallons of water per ton of paper. The mill reporting the consumption of 13,000 gallons of water per ton of paper is equipped with modern pulp saving equipment.

Whenever a closed system for white water is contemplated in a paper mill, it is necessary to consider a number of factors. It would be necessary to consider the accumulation of dissolved salts, particularly alum, in the water and the effect of this accumulation upon the machine clothing. The acidity of the water should be carefully watched, and the quantity of alum gradually reduced as the water becomes more acid in character. The fibers of the white water should be returned to the machine as soon as possible to prevent slime difficulties. Likewise, the system should be designed without dead spots in which the stock might collect and later decay. Recirculation causes the water to become warmer, a condition which during the winter months may be generally considered an advantage.

With this work still in its infancy, it is well to locate a plant where there is certainty of a satisfactory quantity of water for plant operation with the common unclosed system, but with the mill designed to recover as fully as possible all white water losses.

(Continued in next issue)

[2] Modern Pulp & Paper Making, p. 406.

[3] Data obtained through correspondence with Forest Products Laboratory.

Ungerer's Modified Soda Process

A NOTE on Ungerer's modified soda pulping process is reproduced in Chemical Abstracts from the proceedings of the German Association of Cellulose and Paper Chemists. This process is still being worked at the Stuppach pulp mill with a few modifications. The digester plant consists of a battery of nine well-insulated digesters inter-connected both top and bottom, of which five constitute a working series, while the others are in course of charging and discharging. The digesters have a capacity of 2.07 cu. m. of wood. The caustic liquor (5.6 to 6.0 per cent caustic soda) is contained in a furnace-heated boiler consisting of a tubular preheater and horizontal cylindrical body, which are directly under fire, and an upper cylindrical reservoir, containing both liquor and steam, not directly exposed to the furnace gases.

The liquor is forced under a steam pressure of 6.6 to 8 atmospheres from this reservoir through the battery of digesters in such a way that the fresh liquor enters the digester which is next ready to be discharged and the most exhausted liquor enters the digester most recently filled. As a digester charge of spent liquor is drawn off to transfer to the recovery plant, the liquor in each of the other digesters is passed one stage forward, while the digester ready for discharge is drained under steam pressure from the liquor boiler. The pulp from this digester, saturated with practically clean, fresh liquor, is conveyed to a system of Shanks' lixiviating tanks, the ultimate washings from which are returned to the caustic liquor plant. Thus, no washings are treated in the soda-recovery system.

The nine digesters give twenty-four charges per twenty-four hours. The make-up in the soda-recovery plant consists partly of sodium sulphate and partly of carbonate; excess of sulphate in the make-up causes corrosion in the liquor preheater. The consumption of chemicals per 100 kg. of cellulose is 4.04 kg. of sodium carbonate, 7.08 of sodium sulphate and 25.6 kg. of quicklime.

A Comparison of Methods Used for Testing Sulphite Cooking Acid

By W. H. BIRCHARD
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IN ORDER to insure the production of a uniform stock or to produce a stock of desired quality, close control of the acid in the process of manufacture is required in order to keep in close touch with the degree of depletion of the acid during cooking. In both the control of the acid making and the testing of the cooking liquor during the process of cooking, a method is desired which will be of easy manipulation, rapid and accurate.

The liquor used in the sulphite process is made by passing water down a tower filled with limestone, up which a stream of sulphur dioxide is passing. The reaction takes place in three stages represented by the following equations:

(1) $H_2O + SO_2 = H_2SO_3$
(2) $H_2SO_3 + CaCO_3 = H_2CO_3 + CaSO_3$
(3) $CaSO_3 + H_2SO_3 = Ca(HSO_3)_2$

Thus the final liquor is a solution of calcium bisulphite in sulphurous acid, the final concentration of the calcium bisulphite depending on the temperature of operation and the rate of feeding the water and gas. The desired concentration of SO_2 combined as bisulphite is obtained in this way, after which the raw acid is boosted up to the desired "total" SO_2 by means of relief gases from the digesters. These gases consist mainly of steam and sulphur dioxide with a few of the more volatile products formed in cooking such as spruce turpentine, which collects on the top of the acid storage tanks as a thick oily liquid. Any desired concentration of free SO_2 may be obtained in this manner.

The constituents of the cooking acid that we are most concerned with are SO_2 and CaO and it is important that one should know the correct percentage of each in the acid. Although the presence of sulphate and sulphur in the acid has a detrimental effect on the cooking, these are seldom present in sufficient quantities to cause trouble and are therefore only tested for periodically. Thus a standard gravimetric method may be used. A gravimetric method for the determination of CaO or SO_2 in the cooking acid is out of the question on account of the time entailed. Titration methods must therefore be resorted to.

A method for use in a mill must be simple of manipulation, rapid and reliable to the degree of personal error. The object of this article is to discuss several methods in use from the standpoint of suitability for mill control work. These methods will be discussed not only from the viewpoint of analysing green liquors but for analyzing liquors during the cook.

It is quite necessary during the cook to be able to determine the total concentration of SO_2 and also the concentration of CaO, since the cook will blacken very readily if the SO_2 content becomes too low or the CaO is used up. Since the chemical action that goes on within the digester is not thoroughly understood, the operator must depend on the color of the liquor, the smell and determination of the SO_2 concentration. Much interesting information may be obtained from an analysis of the liquor at intervals throughout the cooking period.

Much has been written on the merits of three methods, Hohn's, Winkler's and Sander's, but a fourth one might well be added which, although the writer has never rightly been able to trace the discoverer, he believes was formulated by Dr. Schwalbe. This method the writer considers to be superior to the others for accuracy, speed and simplicity of manipulation and it has the added advantage of being of use at any period during the cook.

Winkler's Method

Total SO_2—One cubic centimeter of the acid measured with a pipette is diluted with about 100 c.c. of distilled water and is titrated with N/10 Iodine solution using starch as an indicator. The number of c.c. of N/10 Iodine used multiplied by .3204 gives the total SO_2 in per cent.

Free SO_2—A separate sample of one cubic centimetre is titrated with N/10 sodium hydroxide using phenolphthalein as indicator. The number of c.c. of N/10 caustic used multiplied by .3204 gives the per cent of free SO_2.

Combined SO_2—Subtract the free SO_2 from the total SO_2.

By free SO_2 is meant the SO_2 as sulphurous acid plus the half free SO_2 of the bisulphite which becomes available due to hydrolysis. The combined SO_2 represents half the SO_2 chemically combined as bisulphite and is an indication of the CaO present.

Hohn's Method

Hohn's method is a modification of Winkler's. The total SO_2 is first determined by titration with N/10 Iodine to the end point, using starch as an indicator. The blue color is dispelled with thiosulphate and the sulphuric acid and hydriodic acid formed are titrated

with N/10 caustic soda, using phenolphthalein as an indicator.

The reactions taking place are as follows:

(1) $Ca(HSO_3)_2 + H_2SO_3 + 3I_2 + 3H_2O = CaSO_4 + 2H_2SO_4 + 6HI$

(2) $2H_2SO_4 + 6HI + 10NaOH = 2Na_2SO_4 + 6NaI + 10H_2O$

Since this paper is a comparison of methods for mill use, it is not proposed to give a detailed mathematical discussion of the errors involved in these methods. Such a discussion is well covered in a paper by E. Oman.[1]

Of these two methods, Winkler's and Hohn's, the former is more commonly used in American mills, although greater accuracy is claimed for the Hohn method. This claim is debatable.

The great disadvantage of both these methods is the use of phenolphthalein as an indicator. With an inexperienced man such as is usually employed as tester in a mill, the error in titration may be as much as half a cubic centimeter. The presence of carbon dioxide greatly impairs the accuracy of the soda titration using phenolphthalein as an indicator. Carbon dioxide may exist either in the titrating solution or in the acid being titrated. In order to get accurate results, the titrating solution and the acid solution must be free from carbon dioxide.

In mill practice this is a condition which seldom exists. Even the purified sticks of caustic soda which are sold as pure and which are used in making up caustic solution contain up to five per cent of sodium carbonate. The distilled water used is seldom free from carbon dioxide.

If the acid making process is examined it is seen that here again there is a solution containing carbon dioxide, as considerable quantities of carbonic acid are formed by the action of sulphurous acid on the limestone in the towers. If this carbonic acid remains to any extent in the acid it will affect the alkaline titration since carbon dioxide reacts with phenolphthalein.

The process of boosting up the cooking acid by the use of relief gas or by the addition of reclaimed acid introduces more acid and organic compounds which react acid to phenolphthalein. If waste acid is added to any appreciable extent, the error in the combined sulphur dioxide determination is appreciable. Any error due to foreign acids tends to lower the calcium oxide figure.

With the Winkler method, by titrating with caustic soda to determine the free SO_2 content, normal sodium sulphite is formed in solution. Since this is a salt of a weak acid and strong base, on hydrolysis it gives an alkaline reaction. For this reason the free SO_2 found is slightly lower than the amount actually present. This error is fairly constant for any given mill since mills seldom vary the concentration of their acid. Thus it is a very easy matter for a mill to determine the error due to hydrolysis the concentration of acid they are using. This is done by making up a carbon dioxide free solution of sulphur dioxide of the approximate strength used in cooking. The difference between the iodine titration and the caustic soda titration represents the error due to hydrolysis. With the small variations occurring in the SO_2 concentrations in a mill acid, the variation in this error is not appreciable. This error due to hydrolysis is not present in Hohn's method.

Errors may be introduced in Hohn's method as the blue of the starch indicator must be first destroyed before the phenolphthalein can be used. Sometimes two cubic centimeters of raw acid are used for this determination, in which case the burette would have to be filled twice with caustic soda in order to complete the titration. This is not desirable as it adds another possibility of error. Another disadvantage may be seen if the equations of the Hohn method are examined. One molecule of sulphurous acid produces three molecules of acid as a result of the iodine titration. A small error in measuring the acid will be magnified threefold in the alkaline titration.

All the disadvantages enumerated above are magnified when an attempt is made to titrate the cooking liquor after the cook has started, by either of these two methods. During the cooking process, according to Hagglund and Bjorkman,[2] there is formed 0.04-0.09 gms. of formic acid and 2.6-4.2 gms. of acetic acid per 100 gms. of wood. Near the end of the cook, this acid formed during the cooking, makes the results of the above titrations useless since there comes a period in the cooking when titrations by these methods show a negative value for the combined SO_2—due to the alkali in excess of that needed to titrate the free SO_2—being used to neutralize the acids formed during the cooking process. For this reason the iodine titration alone is generally used to determine the total SO_2 and the CaO content of the acid is neglected.

The use of separate samples for the iodine and alkali titrations, as is done with the Winkler method, offers a further opportunity for introducing an error and the author has therefore worked out a modification of this method. One cubic centimeter of the acid is used and titrated with caustic to end point using phenolphthalein as indicator. The same sample is then titrated with iodine for the total SO_2. Care must be taken not to overrun the end point with the caustic or the iodine titration will be of no value. The second titration must be done immediately after the first one. Values obtained by this modified method checked with the Winkler method.

Sander's Method

A third method is that of A. Sander,[3] which is quite modern and is as yet little used in the mills. The

1. Teknik Tidskrift Kemi och Bergsvetenskap, Stockholm—1915 Tech. Assoc. Papers 1921.

2. Svensk. Kem. Tidski. 1924 (36) 133-5; Chem. Zentr. 1925 96 I 590-1.

3. Wochl. fur Papierfabr. 2051 (1920).

fact that complex mercuric salts are formed and hydrochloric acid liberated when mercuric chloride in excess is added to bisulphite compounds is the basis of this method.

The proceedure is as follows:

Dilute a two cubic centimeter sample of cold cooking liquor to 100 c.c. with distilled water and titrate to neutrality with N/8 sodium hydroxide, using methyl orange as indicator. When neutral add 25 c.c. of a saturated solution of mercuric chloride. The titrating mixture which has now become acid, is again titrated with N/8 NaOH until once more neutral to methyl orange. Twice the difference between the second and first titrations gives the percentage of combine SO_2, while four times the second titration gives the percent total SO_2.

This method is based on the following reactions:

(1) $H_2SO_3 + Ca(HSO_3)_2 + NaOH = NaHSO_3 + Ca(HSO_3)_2 + H_2O$

(2) $NaHSO_3 + Ca(HSO_3)_2 + 3HgCl_2 = NaHgClSO_3 + 3HCl + Ca(HgClSO_3)_2$

From the above it will be seen that for each (HSO_3) ion present, one molecule of HCl is liberated. This liberated HCl is determined in the second titration and is a measure of the total SO_2 present.

This method eliminates the error due to carbon dioxide in the solution by using methyl orange as indicator which is not affected by carbon dioxide. But in using this indicator, another chance of error is introduced as methyl orange is an indicator which even a trained chemist has difficulty in using and is almost valueless in the hands of an untrained man. It is difficult of manipulation even for a trained chemist and wherever the author has used it or seen it used the results were unsatisfactory in all cases.

Miller and Swanson[4] say "the Sander's method gives for the first time a convenient method for determining the rate of exhaustion of the cooking acid at all times in the cook, giving as it does close measure of the concentration of combined SO_2." This cannot be so, since this method is open to the same criticism as the Winkler method inasmuch as the acid formed during the cook will affect the alkali titration. Tables I and II support this contention.

TABLE I

	Sander's Method			Iodate Method		
Hour	Total SO_2	Free SO_2	Comb. SO_2	Total SO_2	Free SO_2	Comb. SO_2
4	2.01	1.65	.36	2.01	1.21	.80
5	1.82	1.66	.16	1.79	1.24	.55
6	1.09	.97	.12	.92	.57	.35
7½	2nd titr. 3.4 c.c.	1st titr. 3.8 c.c.	−.4 c.c.	.83	.73	.10

Table I shows tests made by the Sander and Iodate methods on the same cook, S-2 C-14A, the samples being drawn at definite intervals. The Sander method throughout gave high values for the free SO_2 content and at the end of the cook showed a negative value for the combined SO_2 as does the Winkler method. Each titration on each sample was checked.

4. Tech. Ass. Papers—1922.

TABLE II

	Iodate Method		Sander's Method	
Cook No.	Total SO_2	Free SO_2	1st Titr.	2nd Titr.
S-2 C-14	.54	.41	2.5 c.c.	2.2 c.c.
S-2 C-16A	.86	.76	3.5 c.c.	3.3 c.c.
S-2 C-15	.60	.41	3.4 c.c.	2.8 c.c.
S-2 C-13	1.24	.80	3.5 c.c.	4.6 c.c.
S-2 C-12	.54	.41	3.7 c.c.	2.3 c.c.
S-3 C-1	.83	.60	3.6 c.c.	.....

Table II shows a comparison of the Iodate and Sander's methods used for titrating the cooking liquors at the time of dumping, of six digesters. As will be seen from this table, only once in using the Sander method did the second titration exceed the first, showing a negative value for the combined SO_2, at the end of the cook in each instance. The cooking liquor from S-3 C-1 contained a small quantity of phenol. The addition of mercuric chloride to this liquor destroyed the titration by forming an opaque milky solution. This shows the inadvisability of the use of mercuric chloride in the presence of organic compounds with interact with the mercuric chloride. The Iodate method on the other hand was as suitable for this cook as for any of the others.

Iodate Method

The fourth method of control and one which the author has found very easy of manipulation and dependable is the Iodate method. This method is as follows:

One cubic centimeter of acid is diluted to 100 c.c. Titrate to end point with N/10 iodine solution using starch as an indicator. Add 10 c.c. or an excess of 3 per cent potassium iodate and titrate to end point with N/10 sodium thiosulphate. This titration should be done fairly slowly, shaking the while, as this reaction is a time one.

Iodine titration $\times .32 =$ total SO_2

$Na_2S_2O_3$ titration $\times .32 =$ total + free SO_2

$Na_2S_2O_3$ titration minus iodine titration gives free SO_2.

All results are in per cent when the factor .32 is used.

The reactions taking place are as follows:

First titration:

$Ca(HSO_3)_2 + H_2SO_3 + 3I_2\ 3H_2O = CaSO_4 + 2H_2SO_4 + 6HI$

Addition of KIO_3:

$6H_2SO_4 + 18HI + 5KIO_3 + 12KI = 6K_2SO_4 + 5KI + 15I_2 + 15H_2O$

Second titration:

$15I_2 + 30Na_2S_2O_3 = 30NaI + I5Na_2S_4O_6$

This method makes use of an indicator that can be used by even the most inexperienced. The reactions involved are also unaffected by the acids formed during the cook and therefore it is quite suitable for

determining the rate of exhaustion of the cooking acid during the cook. Another advantage is that this method uses the same sample for both titrations.

TABLE III

	Iodate			Sander			Winkler		
Sample	Total	Free	Comb.	Total	Free	Comb.	Total	Free	Comb.
1	4.03	3.01	1.02	3.87	2.93	.94	4.03	2.98	1.05
2	4.06	3.04	1.02	3.93	2.91	1.02	4.06	2.97	1.09
3	4.12	3.06	1.06	4.06	3.93	.93	4.12	3.04	1.09
4	3.00	2.24	.76	2.88	2.00	.88	3.00	2.20	.80
5	3.90	2.88	1.02	3.71	2.71	1.00	3.87	2.84	1.03

Table III shows a comparison of the three methods, Sander's, Winkler's and the Iodate. Five different raw cooking acids were used and each result was checked.

The slightly low values for free SO_2 by the Winkler method due to hydrolysis are quite clearly shown in this table and show quite a constant variation from the Iodate values. The values by the Sander method are at a considerable variance with the other two methods and are not very satisfactory.

Summary

1—Three methods of control analysis were compared with a view to determining the best method for control work throughout the cooking period.

2—Tests were made using the different methods on both raw acids and acids during the cook.

3—The Iodate method was found to be of greatest value.

The author wishes to thank Dr. L. F. Goodwin for his kindly criticism of this paper.

Savings on Trucking Costs

Paper Mills and Paper Houses Find Simple Means to Offset Advancing Costs

By S. K. HARGIS

PAPER mills and paper dealers often face unusual and peculiar problems when it comes to motor truck fleet operation. The item of expense in connection with haulage of paper stocks is a heavy one and with costs in general rising, attention of this matter is of importance.

Many of the large eastern paper houses are solving many of their trucking problems by extremely simple means and methods.

Trucking of heavy paper stocks from mill to warehouse, from warehouse to freight terminal, from mill to jobber entails an amount of expense that must be a known quantity to the mill or dealer who happens to operate his own fleet, whether it be gas or electric, or both.

It isn't difficult to keep performance records on paper trucks because they can be of the simplest; only through knowing what performance is can these costs be kept within control at all times.

What the Company Wants to Know

The paper mill and paper jobbing house will require certain general classes of information on trucking operations:

a—Rate of depreciation on each unit, for amortization.

b—Consumption of gas and oil per ton mile.

c—Tire replacement costs per mile.

d—Damage to and replacement of parts.

e—Average length of time in shop, per truck unit.

Value of Centralized Control

First let me say a word about central control of the truck fleet. Many in the industry because they have small fleets, often only 2 to 7 units, scoff at the idea of assuming the expense of centralized fleet control. To employ one man to manage a few trucks appears to be a waste of time and money.

Let me quote from a letter written by the head of a single plant: "We operated five trucks in 1923, six in 1924. This year we have used 7. Up to the fall of 1924 we had no central management of our trucks though we owned them and operated them privately. Each driver was more or less his own boss, accountable only to the shipping clerk. Each driver made out his own reports which were very general and gave us very little data upon which to base truck operation costs. We wanted to arrive at the ton mile figure. It wasn't possible. An outstanding feature was the fact that some of the men made showings so much better than others. So we took the man with the best and most consistent truck record, gave him $50.00 a week and called him fleet boss. We hired him to bring the costs of operation on all the other trucks down to the figure he had held for 19 months and to raise their delivery capacity up to his figure as well. * * * I might add that he succeeded in doing this within a year. In the first place, he got gas costs down 17 per cent, oil bills dropped 12 per cent and our ton mile delivery rate was shaved off 9 per cent. Our reports were of actual use to the auditors and the business office. It was easy to arrive at our ton mile cost. All records are kept by our boss, all repairs are supervised by him; he hires and fires the men. He gets a bonus every time he reduces our ton mile haulage cost. Our truck troubles have largely vanished."

This man also states that any house with from 3 to

6 trucks can afford to appoint a supreme head for their management, with profit.

Platform Plan Saves Costs

Obviously, the loading platforms of any plants are nerve centers and their problems are closely tied up with trucking, even though the plant may have ample sidings and car load extensively.

Those who have studied the matter are pretty well in agreement that a lot of costly time is wasted at loading platforms due to lack of system. In one plant we found it possible, by enlarging the truck yard and gangway and by allowing two truck exits to reduce "dead hours" on a fleet of trucks by 32 per cent. In connection with this plan, the whole method of handling goods on the loading platform was put on a systematic basis with immediate and noticeable results.

While many of the larger plants have recognized the "nerve center" of the business in the loading platform, the smaller ones pay scant attention to it.

Given a centrally directed truck fleet and one that is efficient, together with a well organized loading platform and the plant is able to slice its overhead by anywhere from 12 to 20 per cent.

What Should Our Trucks Cost?

There are plants in the industry who are able to operate 1½ to 3 ton trucks at from $9.50 to $11.85 per day, though I find that costs run as high as $14.00 per day. I doubt whether very many of the plants are running their gas trucks on less than 40 cents per mile.

One plant was using two two-horse teams to handle some of their deliveries at $15.00 per day and the truck at $10.75 did the same job exactly. Of course, stops have much to do with mileage costs of trucks. As one expert recently pointed out, merely because a plant gets a high mileage cost for truck operation, it is no sign that the truck isn't efficient and profitable. Mileage cost often only tells part of the story.

Deliveries must be prompt in the trade and this means steady going and as much speed as is safe. Very often one of our trucks must go a round about way to make a delivery of importance on time. This shows a greater than normal mileage but in a profitable cause.

Cutting Down Service Costs

One plant with which I have been in contact has found a method of reducing its truck service costs on nine trucks running from 2 to 3½ tons. Formerly each driver attended to the filling of his truck at the beginning of each day's work. Now this job is assigned to a single young man who is trained to the job. He drains every crankcase at 250 miles, refills and checks up on gas tanks, water and on the batteries. He is able to go through the 9 trucks in the course of the night. He is paid $32.50 per week. He is required to keep a careful checkup on all materials used.

A particularly interesting feature of this inspection is a weekly examination of all tires in service.

Do Governors Pay?

One plant executive informed the writer that governors on all of their six trucks, set for 23 miles per hour, had greatly saved in repair bills and in costly accidents through careless driving with loaded vehicles.

Should the Plant Own Trucks?

The question as to whether the smaller plants should own their own trucks or hire them from a local transport company is a controversial one. The best opinion seems to be that in order to profit by hiring transport (at sometimes exorbitant rates) the plant is relieved of a profit less overhead during quiet periods when the volume of goods haulage isn't great. On the other hand, the lesser cost possible through private ownership and operation together with greater dependability, pulls in the other direction. Most executives feel that their trucks have a certain advertising value which should not be overlooked and if there are possible savings on the system of hiring transport, they do not greatly offset the advantages of the private fleet in other ways.

It always has to be remembered that the small fleet, operated by a single plant for its own needs, puts control of delivery policies squarely in the hands of the firm and men can be trained with greater care to handle merchandise carefully and to hold their records up.

What Adds to Truck Costs

Those who have kept closest watch on the causes for truck depreciation in the trade have found that governable practices clearly are at the bottom of it, such as:

a—Undue racing of motors during pauses in traffic and at terminal points.

I—Creating carbon.

II—Wearing out bearings and rings.

b—Unnecessary starting and stopping.

I—Hard on break linings.

II—Hard on motor parts and chassis.

III—Costly in gas.

In this connection, one plant believes that driving habits can be either good or bad and that the average truck driver in the trade can be educated to the right series of driving habits.

"In one year, by careful training and spotting on our fleet men," said one fleet boss to the writer, "we reduced our mileage costs from 44 to 34½ cents and prolonged the life of our trucks certainly by six months. We forced the men to drive with care as to stopping, starting and racing of engines. Real policing is necessary to make a crew of men follow these rules, but it can be done and it is."

Lessons in Paper Making

Lesson III—Wrinkles and Rips

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

This article is the third of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general educational course conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

WRINKLES in dry felts are a costly proposition and except in exceptional circumstances, it seldom pays to spend the time necessary to eliminate them. In the case of a felt which has run 80 per cent of the life expected of it, the only reason which would warrant work on a wrinkle would be:

a—If the wrinkle is a short one.

b—If the machine will probably shut down during the succeeding 24 hours for wash up or color change.

Much can be done with a wrinkle in a new felt if acted upon promptly, to get satisfactory service out of it.

Tears and rips are much easier repaired, although much depends on the manner in which they are sewn. Too often a rip is sewed in a slovenly manner and a wrinkle is formed, leaving the felt in a worse condition than before.

The wear of clothing is somewhat of an obsession with us all. We are imbued, and to a certain extent rightly so, with the laudable ambition to get the utmost service out of wires, wet felts and dry felts.

There comes a time, however, in the life of clothing, as with automobiles, when it is cheaper to ditch it on the junk pile than fool with it any longer.

Quite a few things may cause a wrinkle, but there is only one result, and that is one section of the felt in its width is longer and slacker than the other.

A wrinkle may therefore be defined as the slack portion of the felt folding over on itself under the influence of the pull or tension of the felt.

Among papermakers there is considerable debate as to which side a wrinkle will run to. Some say from the tight side to the slack, and others equally positive are sure the wrinkle will run from the slack to the tight.

If we study the definition in the preceding paragraph, we will see that they are both partially right, and arrive at the following guiding rules:

a—There is a tight section of felt on either side of the slack, even if the wrinkle starts from the edges. The edges overhanging the dryers are tighter than the felt which comes in contact with the dryers.

b—**Action** or **Control** depends on **Arc** of **Contact.**

c—**Arc** of **Contact** equals **Weight, Pull** or **Tension.**

d—The **Slack** will be **Pulled** to the point of greatest **Tension.**

We therefore arrive at the following conclusions:

a—The **Slack Portion** of the felt will fold over on itself, constituting a wrinkle, and will **Run to** the **Tightest Section** in the **Width** of the felt.

b—The beginning point of the wrinkle in the direction of the travel of the felt, will point to a tight side, the slack will fold over on itself running across its width, and the **End** of the wrinkle will finish up and point to **the Tightest Side.**

It is important that this point be clear because in eliminating wrinkles we must work on the **Tightest Side.**

Mechanical Causes of Wrinkling

a—Rolls out of alignment, particularly hitch, stretch or corner rolls.

b—Unequal tension on the automatic stretch roll.

c—Dirty felt rolls.

d—Continuous unequal moisture content in the paper delivered to the dryers, causing uneven shrinkage in the felt, particularly noticeable in the felts on the first dryer section.

e—Worn dryer bearings, especially on pony dryers, causing uneven stretch in the felt.

f—Faulty weave in the manufacture of the felt. With the exception of trying out new ideas in felt manufacture, this condition is exceptionally rare.

Accidental Causes of Wrinkling

a—Running the felt off the machine.

b—Leaving too much slack when sewing a tear.

c—Sewing seam out of alignment, particularly when sewing a new seam in an old felt.

d—Letting water come in contact with felt.

Bulges causing wrinkles are rare. Yet, it sometimes happens when taking a wad of paper from the bottom dryers, the wet paper becomes jammed between the dryer felt roll and the upper dryer. Should the dryers be run a few feet and this condition not noticed by the operator, the felt would go ahead on either side of the jam, while the felt under the paper would be held and stretched even to the bursting point.

Eliminating Wrinkles

In a previous lesson, we found that the felt with its

adjacent rolls formed a series of rectangles; that each rectangle was similarly operative in its effect on the felt, the **Amount** of effect depending on the **Arc** of **Contact** the felt makes with the rolls concerned.

Following this rule, it will be found that, no matter what the cause of the uneven length of felt across its width is, the wrinkle will **Develop** on a **Short Tight** draw.

The tightest draws are the hitch and stretch roll combination, the pony dryer felt rolls, and the corner roll around which the felt passes to come in contact with the dryers.

Of these, the pony dryer felt rolls and the corner roll are fixtures, but can be used to put leaders around for quick action.

The hitch and automatic stretch rolls are both adjustable and can be used either in this manner or by using leaders.

On all these rolls the felt makes an **Arc** of **Contact** more than half the circumference of the roll and is succeeded by a tight draw; therefore, the **Effect** of whatever adjustment we make will be rapid.

For the purpose of enumeration, wrinkles can be divided into two classes:

a—Running diagonal wrinkles.

b—Straight wrinkles.

The first class can be again subdivided into:

a—Wrinkles that run across the entire width of the felt.

b—Wrinkles that run only partially across the felt —that is, start at one edge and run in a few feet; or start from an inside position and finish on the edge.

The first of these is usually caused by faulty alignment of the stretch roll or a crooked seam and can be adjusted by altering the alignment of the stretch roll without the use of leaders.

The second of these will have been made by some accidental cause and will necessitate the use of leaders.

Before altering the stretch roll, note the pull of the seam. The side that is leading ahead is the **Slack** side. The side that is behind is the **Tight** side. When we remember it is **Tension** that pulls the felt into a wrinkle, we will realize it is better to slacken the tight side, rather than tighten up the slack side.

One link in the weight chain at a time is enough. Do not go to extremes. After adjustment watch the felt carefully.

When adjusting the weight chain on the run, place a wedge under the track wheel of the stretch roll to prevent it from slipping, have the weights removed on that side only, raise the chain from the sprocket and set it back one link, have the weights replaced and remove the wedge.

When dealing with a wrinkle which runs only partially across the width, the point at which the development of the wrinkle **Ends** will determine whether the mechanical adjustment of the stretch roll can be used as a remedy. Should the wrinkle end near the edge of the felt, then that side may be slackened back.

If the wrinkle ends near the middle, then it is obvious that a small mechanical adjustment would have little effect. As it is not advisable to throw the roll too much out of alignment, the use of paper leaders round a **High Tension** roll becomes necessary.

Stop the felt with the **Point** of development just starting round the roll, then run a light leader around the roll on the **Outside** of the run of the wrinkle.

Run the felt gently until the **End** of the wrinkle is on the same roll, then place a **Heavy** leader around the roll **Outside** the completion of the wrinkle.

In case of a bad wrinkle, this may have to be repeated on the next **High Tension** roll in the direction of the felts travel.

The **Action** of the leader is to increase the circumference of the roll at that point. By this means, the portion of felt traveling around the increased circumference is **Driven** further ahead, which is equivalent to slacking the felt. Figure 12.

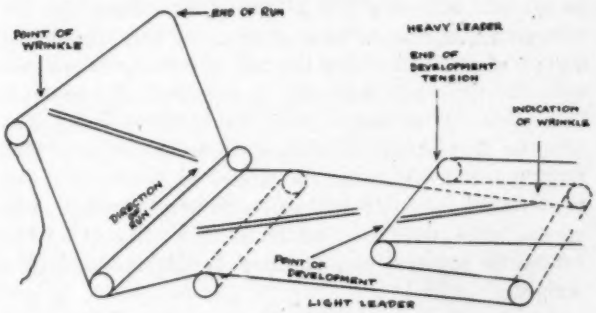


Figure 12

Straight Wrinkles

Straight wrinkles, as shown in Figure 13, are commonly called tight wrinkles, although as with diagonal wrinkles they are caused by one section of the felt being slacker than the other. In this case, however, the slack portions of the felt are of wide area distributed equally on either side of the tight portion of the felt, which will be found as a narrow strip running parallel with the outside edges of the felt.

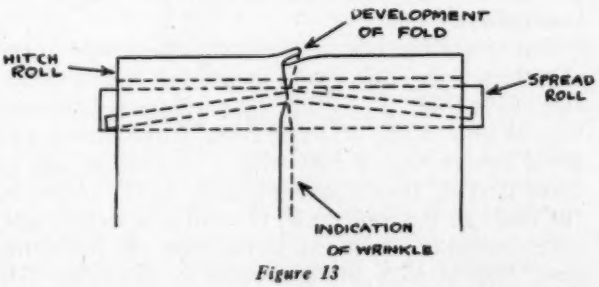


Figure 13

The **Cause** of the wrinkle is the **Tension** or pull of the tight strip pulling the slack area inwards towards itself. As the tight strip is narrow, of equal width

and parallel with the edges of the felt, the tension is exerted equally on each edge of the strip.

Consequently there is no tightest edge for the slack areas to be drawn to—each edge of the strip is equally tight; therefore, the **Development** of the wrinkle will be a **Fold** parallel with the edges of its cause and with the edges of the felt.

These wrinkles are exceedingly difficult to cure and cost more in time than the diagonal wrinkle. Alignment of the stretch or hitch rolls as a remedy is almost impossible because of the narrow width of the strip exerting the tension. For the same reason ordinary paper leaders are useless.

There is a remedy, however. As the cause of the wrinkle is the tension or pull of the tight **Towards** itself, we can introduce a greater pull in the **Opposite** direction.

This is done by:

(a)—The use of spread rolls.
(b)—By a rope **Worm** round a high tension roll.

In the first case, the spread rolls should be placed in contact with the felt at the point where the development of the wrinkle starts. If this should be on the corner roll where the felt is coming in contact with the dryers, it may not be mechanically possible to do this. That would mean the wrinkle would continue to develop in its journey round the dryers. The next point of development would be where the felt runs round the hitch roll on its return journey. The spread rolls could be inserted at this point and steps taken to prevent the further development of the wrinkle.

By the angle at which they are set, that is, the center leading, the felt comes in contact with the outside ends of the spread rolls first. A pull towards each outside edge is therefore exerted. By placing the spread rolls immediately before a high tension roll, the development of the wrinkle is prevented and the succeeding short tight draw holds the advantage gained.

To prevent further development, run a rope worm at a steep close angle round the stretch roll on either side of the fold. To do this, use medium weight sisal rope as used in the finishing room, fray the end, rub about twelve feet of rope with a solution of size to make it stick, then starting exactly in the center of the fold run the rope round the roll at a steep angle, each revolution about two inches from the preceding one. Repeat with another worm on the other side of the fold. The edges of the wrinkle will be tight but the center of the wrinkle by the act of folding over has become stretched and slack and all the elasticity has been pulled out of it. To cure this use a strong solution of size and coat the center of the **Fold** on the side of the felt which does not come in contact with the surface of the dryers.

Run the belt slowly round allowing the size to bake hard. The effect of the size will stiffen the center of the fold preventing the further development of the wrinkle. These measures occupy at least one hour of time and are only warranted if the wrinkle occurs in a new or nearly new felt.

Bulges

A bulge in a slack place in the felt (Figure 14) probably about two feet wide and about three feet long, is caused usually by that portion of the felt being held during a jam in the dryer, or by allowing

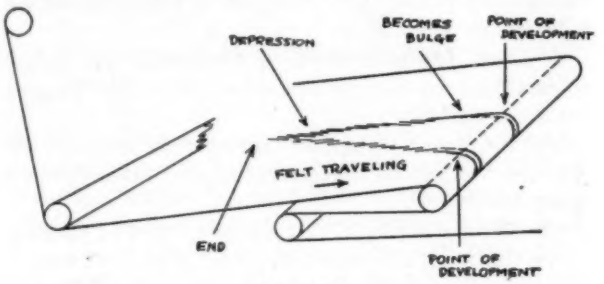


Figure 14

a thick bulky wad of wet broke to run round the circumference of a dryer. In the latter case, the felt would be stretched over the area covered by the wet broke as it passes round the peripheral center or point of greatest tension of the dryer.

Such a slack place could also be called a depression. On a long slack draw, the damaged part would sag down causing a hollow. When passing **Over** a high tension roll, however, the slack would bulge up and develop into two short diagonal wrinkles being pulled by the tight portion of the felt on either side of it.

If the bulge is a bad one, it is best to cut it out and sew in an extra seam. However, that is an extreme measure and we are never very anxious to have two seams in a felt.

A bulge must be treated somewhat differently than the ordinary diagonal wrinkle. There will be two short diagonal wrinkles, each **Point** of development being each outside edge of the commencement of the slack area. The **End** of development will be the **Center** of the end of the slack area.

It therefore follows that the **End** of development must travel over the center of the same **Area** of **Roll** over which the damaged portion of felt preceded it. A leader placed round the roll to act on the **End** of development would act also on the preceding slack area of felt thus making the trouble worse instead of better.

This leaves us only the **Points** of development to act on by the use of paper leaders. By placing a heavy leader round the roll just **Outside** each point of development, we drive the felt further forward at these points, thus reducing the tension by the **Gradual** increasing width of the slack area.

This action prevents the development of the slack into wrinkles. Further action can be taken by stopping the felt with the damaged part on a long slack

draw. The slack portion would then sag down and by taking a stiff wire brush and brushing the felt hard from the edges of the depression to the edges of the felt, we can brush some of the slack out making it occupy a wider area so that when it travels round a high tension roll the pull will neither be so sudden or acute.

It is the sudden transition from **Slack** to **Tight** which causes wrinkles and a good working motto is: **Release the Point of Highest Tension.**

How Much of Your Estate Will Go to Your Heirs

Inheritance Taxes Much Lower Under Current Law

By M. P. SNOW
Public Accountant and Tax Consultant

EVERY prosperous reader of this paper has been doing a lot of wondering as to just how much of his estate, under the various tax statutes, will finally reach the people to whom he wishes to leave it. And, since the manner or time of passing is to us a closed book, we are interested whether we be young or old, in seeing to it that those left behind receive as much as possible of that which we have accumulated.

Thick books have been written about the various state inheritance taxes and how you should take into account the laws of each state in which you own property. I shall not try to tell you anything about the statutes of individual states because this would require hundreds of pages to do. However, very large savings are possible by proper procedure in connection with the estate tax laws, so I will just point out the important things about the Federal laws from the standpoint of assuring your heirs of getting the maximum amount of your property.

First, let me say that the new tax law did not repeal the estate tax, as so many people think. It reduced the rates tremendously but did not remove the tax. Under the old law of 1924, the rates began on the same amounts but a large difference is noticeable as you get into the higher brackets. When you come to your maximum rate, there is a difference of 100 per cent over the old rate. Where the highest rate under the 1924 law was 40 per cent, the 1926 law provides a maximum rate of 20 per cent.

Great care must be exercised in the handling of your estate, from the standpoint of your Federal taxes.

Now the gift tax has been repealed effective as of January 1, 1926. This tax provided just as high rates as did the estate tax, so that there was no benefit in giving away or transferring property.

If you **now** decide to distribute a part or all of your estate before death, there will be no gift tax on the distribution. However, let me call your attention to the fact that while the gift tax has been repealed, any gift made within two years before the date of death will be considered as a part of your estate and so taxed. If the gift or transfer is made **more** than two years prior to the time of death, then it need only be shown that this act on the part of the decedent was not made in contemplation of death, which in most cases would be a comparatively simple thing.

"In contemplation of death" means, according to decisions handed down, the contemplation of death within a reasonable time in the near future as distinguished from the general expectation of death entertained by everyone. It would thus seem plain that where a transfer or a gift is made more than two years before death there should be little or no difficulty for the heirs to show that the transfer or gift should not be subject to the Federal Inheritance taxes.

In other words, if you make a transfer or gift of any of your property at the present time, and you live more than two years from now and there is nothing to indicate that you acted in the expectation of death within the near future, his property will be free from any Federal inheritance taxes. I think that such gifts are made frequently because of the fact that not only is the inheritance tax avoided in this manner but the amount of **income tax** is very greatly reduced owing to the fact that the income is split up into small amounts and therefore incurs lower income tax rates.

State Inheritance Tax

Now most of the states have inheritance tax rates of their own. These taxes usually have to be made with cash payments. In its attempts to raise immediate cash an estate may be badly upset and in some cases seriously injured because it is necessary to make forced sales at a considerable sacrifice.

A way of avoiding this very irksome situation is to take out an insurance policy which will, on the death of the insured, pay enough to the estate to defray all taxes and other obligations. This makes it possible for the heirs of the estate to enjoy the benefits of the property without being forced to sell at a low price because of the need for immediate cash. Of course the tax law makes certain arrangements

for conditions of this sort. There is a part of the tax law relating to estates which says that where the Commissioner of Internal Revenue, who administers tax collection in this country, finds that the payment on the due date of any part of the amount determined by the Executor as the correct tax, causes undue hardship to be worked on the estate, the Commissioner may extend the time for payment of any such part for not to exceed five years from the due date. Interest, however, is charged at 6 per cent from the expiration of six months after the due date of the tax to the expiration of the period for extension.

NET ESTATE			1926 ACT
Not in excess of		$ 50,000	1%
Over $ 50,000	to	100,000	2%
" 100,000	to	150,000	3%
" 150,000	to	200,000	3%
" 200,000	to	250,000	4%
" 250,000	to	400,000	4%
" 400,000	to	450,000	5%
" 450,000	to	600,000	5%
" 600,000	to	750,000	6%
" 750,000	to	800,000	6%
" 800,000	to	1,000,000	7%
" 1,000,000	to	1,500,000	8%
" 1,500,000	to	2,000,000	9%
" 2,000,000	to	2,500,000	10%
" 2,500,000	to	3,000,000	11%
" 3,000,000	to	3,500,000	12%
" 3,500,000	to	4,000,000	13%
" 4,000,000	to	5,000,000	14%
" 5,000,000	to	6,000,000	15%
" 6,000,000	to	7,000,000	16%
" 7,000,000	to	8,000,000	17%
" 8,000,000	to	9,000,000	18%
" 9,000,000	to	10,000,000	19%
" 10,000,000		.....	20%

Most people, of course, would prefer that their heirs should not have to depend on the leniency of the Commissioner. Not that the Commissioner has been at all severe. But the idea is to leave the beneficiary in just as good position as possible. It is for this reason that insurance policies are frequently taken out in such amounts as will, according to the Federal and State inheritance rates in effect, forestall the necessity of sales of property or anything of this sort in order to make tax payments.

Let me remind you at this time that taxes which your heirs would pay under the current tax law are much smaller than under the 1924 law. Further, I am pleased to say that I believe there will be further reductions in estate tax rates within the next two years. I do not, however, look for repeal of the estate tax for some time to come. There is strong sentiment in favor of this tax especially among the farmer, labor, and "progressive" representatives of the national Congress, so there is doubt in my mind that we shall see the inheritance or estate tax removed for quite a while.

In order that you shall get a clear picture of how the reductions have worked so far, I am showing below a list of the rates under the new 1926 Federal estate tax law.

In another schedule you will see the rates effective for the year 1924. This latter schedule, however, has been prepared for the primary purpose of showing you what actual refunds may be possible on the estates of decedents dying between the dates of the tax laws 1924 and 1926. For those of you who may be heirs to such estates, this will be of particular interest, and for those who do not have any connection with such estates, it will show what tremendous reductions are being made in the estate tax law, which is a very encouraging thing.

Net Estate			1924 ACT		1924 ACT AS AMENDED		TOTAL		
			Rate	Tax	Rate	Tax	1924	Amended	Difference Refundable
Not in excess of	$ 50,000		1%	$ 500	1%	$ 500	$ 500	$ 500	...
Over $ 50,000	to	100,000	2%	1,000	2%	1,000	1,500	1,500	.....
" 100,000	to	150,000	3%	1,500	2%	1,000	3,000	2,500	$ 500
" 150,000	to	200,000	4%	2,000	3%	1,500	5,000	4,000	1,000
" 200,000	to	250,000	4%	2,000	3%	1,500	7,000	5,500	1,500
" 250,000	to	400,000	6%	9,000	4%	6,000	16,000	11,500	4,500
" 400,000	to	450,000	6%	3,000	4%	2,000	19,000	13,500	5,500
" 450,000	to	600,000	9%	13,500	6%	9,000	32,500	22,500	10,000
" 600,000	to	750,000	9%	13,500	6%	9,000	46,000	31,500	13,500
" 750,000	to	800,000	12%	6,000	8%	4,000	52,000	35,500	16,500
" 800,000	to	1,000,000	12%	24,000	8%	16,000	76,000	51,500	24,500
" 1,000,000	to	1,500,000	15%	75,000	10%	50,000	151,000	101,500	49,500
" 1,500,000	to	2,000,000	18%	90,000	12%	60,000	241,000	161,500	79,500
" 2,000,000	to	2,500,000	21%	105,000	14%	70,000	346,000	231,500	114,500
" 2,500,000	to	3,000,000	21%	105,000	14%	70,000	451,000	301,500	149,500
" 3,000,000	to	3,500,000	24%	120,000	16%	80,000	671,000	381,500	289,500
" 3,500,000	to	4,000,000	24%	120,000	16%	80,000	791,000	461,500	329,500
" 4,000,000	to	5,000,000	27%	270,000	18%	180,000	1,061,000	641,500	419,500
" 5,000,000	to	6,000,000	30%	300,000	20%	200,000	1,361,000	841,500	519,500
" 6,000,000	to	7,000,000	30%	300,000	20%	200,000	1,661,000	1,041,500	619,500
" 7,000,000	to	8,000,000	30%	300,000	20%	200,000	1,961,000	1,241,500	719,500
" 8,000,000	to	9,000,000	35%	350,000	22%	220,000	2,311,000	1,461,500	849,500
" 9,000,000	to	10,000,000	35%	350,000	22%	220,000	2,661,000	1,681,500	979,500
" 11,000,000			40%	400,000	25%	250,000	3,061,000	1,931,500	1,129,500
" 12,000,000			40%	800,000	25%	500,000	3,861,000	2,431,500	1,429,500
" 16,000,000			40%	2,400,000	25%	1,500,000	6,261,000	3,931,500	2,329,500

Cost Accounting for Paper Mills

Part I—Outline of Organization and Chart of Accounts

By CHARLES WILLIAM GOULD, JR.

MUCH of the present-day literature on modern cost accounting is likely to give the manufacturer who has failed to devote sufficient thought and study to the matter, the impression that many of the much-discussed methods consist necessarily of certain "systems" or combinations of accounting principles that must be adopted in their entirety to insure success. It is true, of course, that many such systems have been developed and successfully applied, producing the highest type of plant management and accounting control.

The installation of one of these "systems" so called, requires the services of a professional accountant for a considerable period of time, the expenditure of a large sum of money and an extended amount of study and investigation which usually culminates in much rearrangement and many changes in both the factory and the office. Where the plant is large enough to warrant such methods, the change is frequently justified and generally results in increased returns.

With a great many concerns such a procedure would be out of the question and yet the management might desire to go as far as possible in installing adequate accounting control, or in improving existing methods. Provided he can find the principles of cost accounting control that are applicable to his particular industry, each manufacturer can develop his own system. It is with this thought in mind that these articles have been prepared, it being borne in mind that any and all of these systems rest upon a comparatively small number of accounting principles.

Healthful competition is possible only when it is met on level ground. Recent industrial history is crowded with instances of how unhealthy competition has not only destroyed certain industrial branches, but destroyed capital itself. It is hardly conceivable that any manufacturer would, with full and complete knowledge of the facts, offer to produce and sell an article without sufficient profit or at a loss to his capital. Yet instances of this kind are common. In all probability the self-same article would have found its way to the market at a higher selling price, leaving the necessary margin of profit for all the producers, if somebody without adequate cost accounting facilities had not underestimated his own cost and set the selling price too low.

The outcome of this kind of competition has been to reduce the margin of profit on sales to exceedingly fine factors, so fine in some instances that small differences turu the scale, and it has become imperative to have much more detailed information regarding manufacturing operations than was previously thought necessary. General accounting still is primarily concerned with the external transactions of an enterprise in its dealings with customers, venders and bankers and with the recording of trading results from the financial standpoint. While it still performs this essential service, it fails to furnish the management with the detailed information relative to the internal transactons of the organization.

Cost accounting, if properly applied, should provide the desired information and it may be correctly stated therefore that the difference between trustworthy up-to-date records and fragmentary behindtime guesses at results has often meant the difference between success and failure to both large and small concerns. The increased administrative efficiency of any organization through complete knowledge of all facts regarding the operations of the business may well bring results and profits that are difficult to estimate and the cost of adequate accounting methods are often insignificant in comparison.

In order to obtain a thorough understanding of Cost Accounting and gain a clear insight into the various questions involved, so that one may understand not only the underlying principles, but also their operation in detail, it is quite essential to know first, why a thing is done, and second, how to do it. While a general knowledge is always desirable, and to be commended, it is frequently found insufficient when put to the test. Technical subjects require special consideration and study, especially when the how-to-do-it is involved.

This is particularly true of cost work, for it seems to be a common confession among those handling cost accounts, that while they know in a general way how such accounts should be treated, they seem to be very uncertain when it comes to actually doing it.

This is the first of a series of six articles by Mr. Gould on the subject of Cost Accounting for Paper Mills, which will appear in subsequent issues of The Paper Industry.

The author who is better acquainted with the manufacture of writing papers than with other grades will confine his articles pretty much to this class of mills.

The next chapter will treat on "Building the System" and "Recording Materials and Supplies."

The "knowing how" is the best asset of a good accountant; and in these days especially, when the subject of cost is of such vital importance to the manufacturer, the progressive accountant has the opportunity to show his value. To make the necessary repairs to a car broken down on a country road may take but very little of the repairer's time, but the "knowing how" may be worth considerable to him when making out his bill, and generally is.

While I realize that there are differences of opinion among accountants on some of the phases considered in the presentation of this system, it is the intent of these articles to present what is generally conceded by our leading accounting authorities as the best practice in a well organized progressive paper manufacturing plant, and to so present the subject that it may be fully understood.

Every cost accounting system must be particularly adapted to the business in which it is to be used. Organizations differ in many ways; the nature of the product manufactured, the form of the organization and the methods of direction are varied and dissimilar. Certain definite information is required from every accounting system, and this information and the manner in which it is complied, differ materially in different organizations. However, cost accounting data, to be reliable, must be based upon accurate records of materal consumption and of labor, and a proper distribution and application of the manufacturing burden or overhead charges.

I know perfectly well the time and almost endless patience required to install improved methods in factory accounting. Considerable preliminary educational work must be performed, besides having to contend with the human equation and the endless variety of temperaments of the many individuals involved. However, a really helpful means of inducing harmony and of securing co-ordinated effort is by a good system of committees. Committees are frequently very useful in promoting personal harmony, which is no small thing when installations or improvements in existing conditions are contemplated.

I also desire to stress the point that any system, regardless of how carefully it may be planned, depends for its ultimate success and usefulness upon the whole-hearted co-operation of the individuals responsible for its operation. Furthermore, the value of the system will be but poorly realized, unless the management not only thoroughly familiarize themselves with the scope and operation of the plan, at least in a general way, but also use the results obtained as a basis for executive action in effecting improvements.

Outline of Organization

In order to furnish a background and to present a concrete illustration, it is necessary to assume an established organization and a given set of operating conditions. Technical or unusual situations and manufacturing conditions will be, in so far as is practical to do so, omitted, since they have but little general interest.

Assume that the plant under consideration manufactures high grade ledger, linen and bond writing papers exclusively, with sales running well over one million dollars annually. In order to supply customers promptly it is necessary to carry a large stock of both rough and finished papers in a wide range of sizes and in varying substances.

The company's finances are in excellent condition. They own and operate two mills and are free from bonded debt. The buildings are well maintained and the mechanical equipment modern and in good operating condition. They operate three fourdrinier paper machines and are prepared to manufacture and finish their product in both roll and sheet form, loft or air dried; producing approximately 2,500 tons of quality paper per annum.

The concern is departmentalized according to functions (see Burden Ledger accounts) which indicates a modern method of securing accurate costs and of providing cost information for proper administrative control. In addition, this company maintains a well equipped chemical laboratory, besides conducting a sales promotion department.

Materials form a very important part of the cost of paper. The principal materials used in manufacturing the product of this concern are rags, pulp, hides for sizing, chemicals and colors. Nothing but white rags, free from all objectionable materials, are used, which necessitates a well organized purchasing department.

The matter of purchasing is most important. In many concerns this function is performed by several people in an unregulated fashion with consequent wastes and poor results. Whether the plant is large or small, the purchasing authority should be centralized and proper safeguards against dishonesty and negligence instituted. Organized systematic methods of purchasing are imperative, and the responsibility should be placed so that all transactions will be checked as accurately as the payroll or any other transaction. This is especially true where the materials purchased must have certain characteristics to insure the correct quality of the product.

With this organization in mind, let us consider certain other facts necessary to develop the system.

The productive departments require little comment at this time, as they constitute the operating centers of the plant, the nature of which is apparent. The service departments, those maintained for the service of the operating departments, consisting of receiving, stores, planning, laboratory, cost, factory administration, etc., are grouped into one account designed as General Mill Burden.

The general administrative department is a division of responsibility which concerns the financial,

legal and commercial side of the organization. It should be carefully distinguished from the factory administrative departments, the expense of which is a part of the factory burden.

Books of Account

The purpose of this treatise being to present the cost system of the plant under consideration, only no attempt will be made to describe in detail the general books of original entry, as this phase should be familiar to the reader. A description of the general ledger accounts is all that is necessary to show the tie-up between the general and cost accounts.

Controls are maintained in the general ledger for all the cost accounts. These controlling accounts are: inventory accounts (schedule A), machinery and equipment, general administrative expense and selling expense accounts; together with a Burden Ledger account, Burden Control, which controls the subsidiary ledger of the same name.

The inventory accounts, when posted up, will show in total the amount of the individual items shown on the respective store cards or balance of stores sheets which are operated for each item of raw materials, the same is true of supplies, in-process and finished goods accounts. Each one of these accounts controls a separate set of stores or stock cards. The operation of these minor subsidiary ledgers is omitted for the present but will be given due attention later; the operation of the Burden Ledger, however, is somewhat different, and therefore a word of explanation will be helpful.

The Burden Ledger contains all the factory accounts, with the exception of inventory accounts, which are kept in the general ledger, and is so designed to provide cumulative information in analytical form and with a minimum amount of work. It is most desirable to have, for periodical statements, a total of each item of overhead expense, therefore, one sheet of the burden ledger will be used for each of the operating departments or centers, on which the details to be carried for the operating expenses of that center will be recorded. The classification of the operating expenses shows first the direct expenses over which the head of the department has some control. Below the direct expenses are shown the redistributed expenses. (See expense classification.)

The operation of the Burden Ledger will be explained in detail later in connection with the development of departmental burden.

Besides the general journal, the general ledger and the burden ledger, there will be kept in this instance an Accounts Payable Register. The Accounts Payable Register constitutes one of the convenient devices for distributing charges and is a very useful record. Its form is governed by the Chart of Accounts and will be explained fully in connection with the presentation of cost forms.

Chart of Accounts

Classification is the most important feature of cost accounting. In fact, aside from purely technical details, there is but little else to cost finding.

The classification of accounts used in operating this system is given below. In plants of any size it is frequently found necessary, in order to promote accuracy in recording charges and credits, as well as to save time, to employ some system of codification.

In all cases it is considered good practice to furnish copies of the chart of accounts for the use of those who are authorized to make charges, in an effort to insure accuracy. To rely on memory only is to invite error.

While a system of codification is worked out for this particular system and presented below to demonstrate its operation, it is believed that the reader will find it much easier to understand if the names of the accounts employed are used in place of their respective code symbols.

BALANCE SHEET ACCOUNTS

Assets

Code	Account Name
A	CURRENT ASSETS
	A-1 Cash in Banks
	A-2 Petty Cash
	A-3 Trade Notes and Acceptances Receivable
	A-4 Accounts Receivable—Customers
	A-5 Accounts Receivable—Others
B	INVENTORIES AND DEFERRED CHARGES
	Inventories, Schedule "A"
	B-30 Freight Suspense
	B-31 Insurance Unexpired
	B-32 Taxes Accrued or Unexpired
	B-33 Interest Prepaid and Receivable
C	FIXED ASSETS
	C-1 Water Rights
	C-2 Land
	C-3 Buildings
	C-4 Building Fixtures
	C-5 Machinery and Equipment
	C-6 Furniture and Fixtures
	C-7 Trucks and Automobiles
	C-8 Investments
	C-9 Good Will

Liabilities

D	CURRENT LIABILITIES
	D-1 Notes Payable—Loans
	D-2 Trade Acceptances Payable
	D-3 Accounts Payable—Trade
	D-4 Accounts Payable—Others
	D-5 Dividends Payable
	D-6 Wages and Salaries Payable
	D-7 Federal Income and Profits Taxes Payable (Estimated)
	D-8 Interest Payable Accrued

E RESERVES
(Against Current Assets and Inventories)
E-1 Sales Discount
E-2 Reserve for Interest on Investment
(Against Fixed Assets)
E-3 Depreciation of Buildings
E-4 Depreciation of Building Fixtures
E-5 Depreciation of Machinery and Equipment
E-6 Depreciation of Furniture and Fixtures
E-7 Depreciation of Trucks and Automobiles
E-8 Depreciation of Investments
E-9 Reserve for Building Repairs
E-10 Reserve for Building Expense

F NET WORTH
F-1 Preferred Capital Stock
F-2 Common Capital Stock
F-3 Surplus
F-4 Undivided Profits
F-5 Periodical Loss and Gain

INVENTORY ACCOUNTS—SCHEDULE "A"

Code	Account Name
	RAW MATERIALS AND SUPPLIES
B-1	Rags
B-2	Pulps
B-3	Paper Stock
B-4	Glue
B-5	Hides
B-6	Chemicals
B-7	General Supplies
B-8	Coal
B-9	Lumber
B-10	Cases, Crates and Frames
B-11	Plater Books
B-12	Finishing Supplies
	PREPARED MATERIALS
B-13	Animal Size in Process
B-14	Rosin Size in Process
	PRODUCT IN PROCESS
B-15	Dressed Rags
B-16	Half Stuffs
B-17	Paper in Process
	FINISHED PRODUCT
B-18	Finished Paper
	GENERAL
B-30	Construction in Process

SALES, COST OF SALES, SELLING AND ADMINISTRATIVE EXPENSE AND REVENUE ACCOUNTS

Code	Account Name
G	Net Sales
H	Cost of Goods Sold (Standard Basis)
J	ADJUSTMENTS OF STANDARD COSTS
	J-1 Inventory Adjustments
	J-2 Unabsorbed or (Over-absorbed) Burden
	J-3 Unused Space and Equipment
	J-4 Raw Material Price Variances
	J-5 Interest Charged to Cost
K	SELLING EXPENSES
	K-1 Packing and Shipping
	K-2 Cartage Outward
	K-3 Samples
	K-4 Selling Salaries or Commissions
	K-5 Traveling Expenses
	K-6 Advertising
	K-7 General Selling Expenses
L	ADMINISTRATIVE EXPENSES
	L-1 Salaries—Officers
	L-2 Office Salaries
	L-3 Fixed Charges on Office
	L-4 Office Expense
	L-5 Bad Debts Expense
	L-6 Life Insurance
	L-7 General Administrative Expenses
M	OTHER INCOME
	M1- Interest Earned
	M-2 Dividends Received
	M-3 Sales Discount Not Taken
	M-4 Tenement Rentals
	M-5 Miscellaneous Sales
N	OTHER CHARGES
	N-1 Interest Expenses
	N-2 Purchase Discounts Not Taken
	N-3 Tenement Expenses

BURDEN LEDGER ACCOUNTS

General Ledger Controlling Account, Burden Control B-40—Schedule "B"

Center No.	Center Name
1	Rag Preparation
2	Rag Cutting and Cut Rag Storage
3	Rag Cooking
4	Rag Washing
5	Stock Digging
6	Beaters
7	Paper Machine No. 1
8	Paper Machine No. 2
9	Paper Machine No. 3
10	Loft Drying
11	Air Drying
12	Sheet Calenders
13	Web Calenders
14	Platers
15	Cutters
16	Sorting and Counting
17	Rough and Finished Paper Storage
30	Preparing Paper Stock
31	Preparing Rosin Size
32	Preparing Animal Size
40	Steam
41	Electric Power
50	Rag Stock Handling and Storage
51	General Stock Handling and Storage

52	Maintenance
53	Case Making and Finished Cases
54	Trucking
55	Water Supply
56	Water Power
57	General Mill Burden
58	Buildings and Ground Expense
59	Unused Space and Equipment
60	Packing and Shipping
61	Samples
62	Advertising
63	Administration
64	Tenements

EXPENSE CLASSIFICATION—BURDEN ACCOUNTS

Class No.	Class of Expense
1	Repairs
2	Indirect Labor—General
2-A	Indirect Labor—Supervision and Clerical
2-B	Indirect Labor—Idle Time
3	General Supplies
3-A	Lubricants
3-B	Belting and Belting Supplies
3-C	Felts—First
3-D	Felts—Second
3-E	Felts—Dryer
3-F	Wires
3-G	Jackets
3-J	Knives
3-K	Chemicals (Rag Cooking)
3-L	Cases, Crates and Frames
3-M	Nails and Straps
3-N	Lining Paper
3-O	Coal
4	General Expense
4-A	Grinding Rolls
4-B	Grinding Knives
4-C	Electric Power (Purchased Electric Power)
4-D	Trucking
5	Liability Insurance
	REDISTRIBUTED EXPENSE
6	Water Supply
7	Steam
8	Water Power
9	Electric Power
10	General Mill Burden
	FIXED CHARGES
11	Miscellaneous Fixed Charges
12	Fixed Charges on Space and Equipment

The observation is made by Urban that a mixture of three volumes of ordinary concentrated hydrochloric acid and one volume of phosphoric acid will dissolve absorbent cotton in 1½ minutes. A solution of this kind is used for separating lignin from wood.

Chemistry of the Sulphite Process

SOME interesting observations are made by E. Haegglund on what takes place when wood is cooked with solutions containing sulphur dioxide and sulphites; one or more ligninsulphonic acids are formed which cannot be removed from the pulp by washing with water, according to an abstract of the paper in J. S. C. I. from **Chemische Zentralblatt** (1925, 96). It is represented that the lignin in wood is chemically combined with carbohydrates, and the sulphonic acids of these compounds hinder penetration of the sulphite liquor.

During digestion, the sulphite liquor reacts rapidly at first and then but slowly. Accumulation of ligninsulphonic acids within the pulp occurs if the rate of hydrolysis of the lignin corbohydrate compounds is slower than the rate of sulphonation, but this increase is hindered by a rise in the temperature of digestion. Sufficient lime should be present so that the digestion is complete or nearly complete before combination of all the sulphite occurs.

Ligninsulphonic acid is comparable in strength with mineral acids. During digestion the concentration of ligninsulphonic acids approaches the original concentration of the sulphur dioxide. At any moment during digestion, the lime present is distributed between the ligninsulphonic acids and the sulphite, and at the completion of digestion the greater part is combined with the former.

The digestion liquor remains bright yellow provided that sufficient sulphite is used, and darkening is caused by the use of high temperatures. Blackening of the cellulose occurs when the acidity of the digestion liquor increases too much by formation of ligninsulphonic and sulphuric acids, insufficient lime being present.

Adsorption Studies of Pulp

AT THE April meeting of the American Chemical Society held at Tulsa, Okla., last April, a paper was presented by R. Macy and C. E. Kim on adsorption studies of pulp in connection with the determination of the copper number. In determining the copper number of pulps a correction is made for the copper adsorbed from solution and not chemically reduced. The copper number is measured at 100°, but the adsorption is determined at room temperatures.

The adsorption is probably not the same at both temperatures. The first studies made in this series have shown there is a high temperature coefficient of adsorption. The adsorption isotherms of a bleached sulphite pulp with Fehling solution have been determined at 0°, 25°, and 50°.

According to Wiborg, in his book **Printing Ink**, the early Koreans produced a very fine and durable paper from silkworm cocoons which achieved a great reputation in China.

Papering the Earth

WHERE agricultural areas are very hot and somewhat dry even the practice of thoroughly cultivating and pulverizing the soil fails to enable the earth to long retain what moisture is available. This inability on the part of the soil prevents the tender roots of oncoming vegetable and fruit crops from obtaining an adequate supply of moisture with the results that production is very low. It is in such places where the practice of "papering the earth" has its greatest value, since the semi-permanent laying of paper assists the soil in moisture retention, shields the tender plants from the hot sun's rays, and enables the protected plants to get "a good start in life."

Panoramic View of Paper-Covered Ranch

Where the papering process is employed, land in hitherto unprofitable altitudes can be made to produce excellent crops

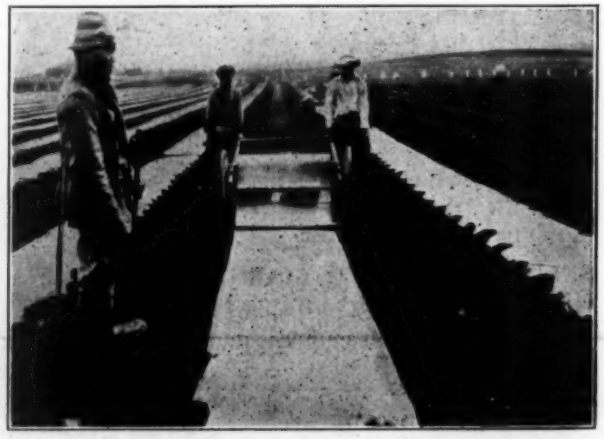
Experiments with agricultural paper laying have been carried forward with a marked degree of success in California, Florida and Hawaii. Particularly in the latter territory has success been met, it being here found that the application of paper has increased both vegetable and fruit yields upwards, and even in excess of, 150 per cent. In the Hawaiian Islands this practice has been most largely tried on the pineapple ranches, but the principle applies as well to other crops such as strawberries, all bush berries, sugar cane, tobacco, tomatoes, potatoes, cabbages, and the like. In several instances yield increases, by the papering process, have been worth as much as $185 an acre, while increases in yield of from $100 to $150 are quite common. During last year (1925) the planters of the Hawaiian Islands laid slightly more than 5,000 miles of such paper at a total cost of nearly a quarter of a million dollars.

According to Robert H. Moulton, writing in "The Field," the paper used is one made by treating felt with asphalt somewhat after the methods employed is making paper roofing, except that the agricultural paper is much thinner. The cost of the paper and labor of application averages, at the present time, about $100 per acre. It is believed, however, that improved methods of application will greatly reduce this cost. One laying of paper, it seems, is sufficient for a period of five years on pineapple ranches, about four years in sugar cane fields, with three years being the average maximum period for vegetable crops.

Three factors were involved in the development of this mulching paper: thickness, weight, and the attainment of a degree of toughness which would permit bulk handling and also to remain on the ground in serving its purpose for more than one season. Paper which will serve for five years in the pineapple fields is believed to be a maximum durability, and that there would be little advantage in hav-

Showing the Appearance of a Field Ready for Planting

Holes are punctured in the newly laid paper and the cuttings or young, tender plants are set out on proper centers. The papering process eliminates all necessity for cultivation, which means a reduction in expense of from $20 to $35 an acre.



How Mulch Paper Is Laid on Hawaiian Plantation

After thoroughly cultivating the soil, ridges are made which are then covered by the paper. In this particular case, soil has been pulled onto the edge of the paper to hold it in place until the plants develop.

ing the paper remain in service for a longer period.

When it is known that Sumatra tobacco growers in Florida have increased their yield upwards of 50 per cent; that California producers increased their yield similarly; that strawberry growers in Louisiana produced 60 per cent more berries after the application of paper; that the reward of this work to sugar planters in Hawaii has been in the form of a 40 per cent increase in cane quantity, it will be realized that the further development and perfection of this scheme will be of far reaching importance to many crop producers in several isolated communities. We would hesitate to say that the process will "revolutionize" either agriculture or the paper industry. It would seem the better part of good judgment, however, for interested paper manufacturers to lend a reasonable effort and devote a certain attention to this rather unique practice.

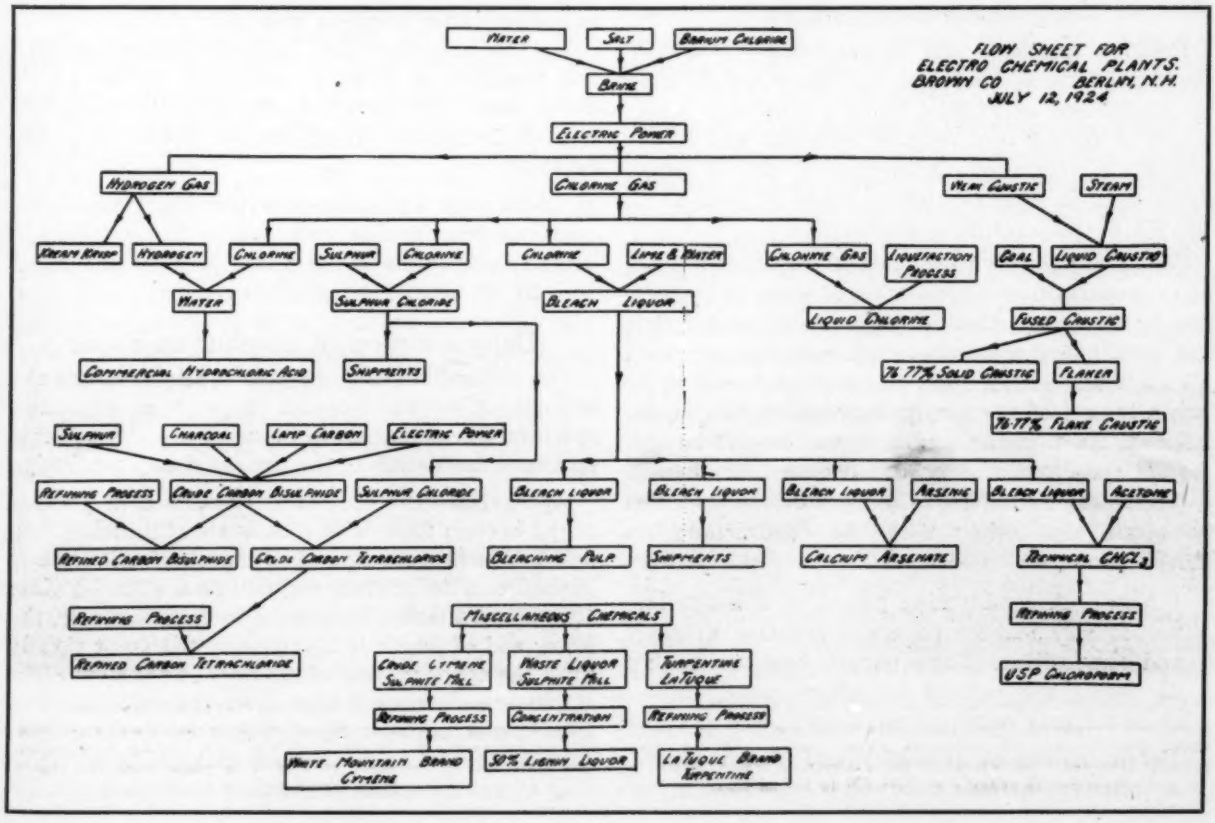
Progress in Pulp and Paper Manufacture

ALTHOUGH the paper industry has unquestionably kept pace with the most progressive of the arts and sciences in the general progress of invention, it is curious to note that it is at the same time one of the few trades that has preserved in use the devices and processes of ancient times. The deckle strap used on the Fourdrinier machine is not in any sense an ancient device, as it dates only from 1811 as an improvement by Didot-Saint-Leger on the original Fourdrinier invention brought to commercial application by Bryan Donkin. The first Fourdrinier machine used in the United States was a Donkin model, imported by H. Barclay, of Saugerties, N. Y., in 1827.

As noted in The Paper Industry of March, 1926, a movement is now under way for the elimination of the deckle strap and its accompanying fittings. There is still a select demand for deckle-edged paper of the kind still made in England and in Italy by the hand-frame methods of the earlier times, and it is characteristic of the age we live in that this quaint original form of deckle-edge paper is in the United States turned out on fast-running machines in a way to resemble the original closely enough for all ordinary requirements.

Although papermaking is an art that has come down to us from remote ages, it is seldom that details of the processes of manufacture are to be found in print outside of the educational journals devoted to the trade. This is singular, considering the position which the industry of paper manufacture occupies among the world's industries, for it ranks very high in the value of its production. Annually, the mills of the United States manufacture paper and paper goods of a value estimated at upwards of $1,200,000,000.

Of late, however, some of the journals devoted to electric and chemical engineering have begun to pay



more attention to developments in the industry bearing on their respective fields. The chemical trade journals have been impressed with the growing tendency on the part of pulp and paper manufacturers to produce their own chemical raw materials and in some cases enter the chemical markets with their excess production of chlorine, chlorine derivatives and caustic soda, while the use of electricity as a driving force has resulted in some of the most notable improvements in speed devices, methods of operation and control.

The chemist's contact with the pulp and paper industry grows more important with the passage of time, and as succinctly observed by one of the chemical trade journals in a recent issue, "from an industry that was far removed from everything chemical regarding its processes, the paper industry has become one that is deriving untold benefits from chemical application to its problems."

The accompanying flow sheet of operations at the mill of the Brown Company, Berlin, N. H., affords a graphic illustration of the extent to which by-product chemicals are produced in a pulp and paper plant. As seen in this flow sheet, the train of operations begins in the electrochemical department of the mill with water, salt and barium chloride, the last named substance being used to throw down impurities and produce a clear brine. A current of electricity generated in a Moore and Allen cell splits the salt solution into chlorine gas, weak caustic and hydrogen gas. Some of the operations are set forth in detail in last month's "Observations of a Traveler."

Paper Testing Methods

Processes, Apparatus and Methods Adopted by the Technical Association for the Analysis of Paper Samples

IN A news note on another page, the result of the test vote of T. A. P. P. I. on the adoption of paper-testing methods is given. Below are three of the methods which have been adopted for testing papers. The atmospheric conditions to be observed in testing paper samples are prescribed as follows:

Atmospheric Conditions

Relative Humidity and Temperature—Whenever required in the test method, the paper sample shall be conditioned and tested in an atmosphere maintained at 65 per cent relative humidity and 21° C. (70° F.) temperature. A tolerance of plus or minus 2 per cent in relative humidity and of plus 5° C. (9° F.) in temperature is permissible.

Conditioning—Each specimen of the paper sample, after preparation for application of the test as specified in the test method, shall be so suspended that the conditioning atmosphere will have free access to all surfaces. Means shall be provided for so circulating the air of the conditioning and testing chamber that its humidity and temperature will be uniformly maintained. The conditioning time shall be sufficient for the moisture content of the specimen to attain equilibrium with the conditioning atmosphere.

> **Note:**—A conditioning period of 2 hours is usually sufficient for papers of ordinary weight and composition. Some papers, however, such as boards and certain specialties made water resistant, may require much longer periods.

Determination of Humidity and Temperature—The relative humidity of the conditioning atmosphere shall be determined by means of either (1) a Sling psychrometer, or (2) a stationary type of psychrometer having the air circulated over the thermometer bulbs mechanically. In both cases, the circulation must be at the rate of not less than 3 meters (10 feet) per second. When the Sling type is used, care must be taken to make the readings as quickly as possible after bringing it to rest.

The thermometers used for determining humidity and temperature must be accurately calibrated by comparison with certified standard thermometers and any corrections found necessary applied to the readings.

> **Note:**—It is recommended that thermometers approaching as closely as possible to the following specifications be used: Range 0° C. (32° F.) to 50° C. (122° F.); graduations, 0.2°.

Determination of Sulphur in Paper

The method officially adopted for determining the amount of sulphur present in paper as sulphides, specifies the apparatus to be used, the character of specimen and details of the test, as stated below:

Apparatus—The apparatus consists of a 500 c.c. round bottom flask with a neck about 2 inches long and 1 inch in diameter. The mouth of this neck is ground to a flat surface and on this is placed a glass tube about 4 inches long and 1 inch in diameter, the lower end of which is also ground flat to fit tightly upon the upper surface of the neck of the flask. The whole is so arranged that after placing a piece of filter paper between the two ground surfaces, the tube and flask can be securely clamped together so that all gas generated in the flask must pass through

the filter paper and then up through the superimposed glass tube.

Specimen—The specimen shall consist of 0.25 gram of air-dry paper from a sample secured by the official sampling method.

Method—Place the specimen of paper in a wide-mouth, glass stoppered bottle with 10 c.c. of water and shake until partial disintegration has taken place, then add another 10 c.c. of water and again shake until the paper has been reduced to pulp. (If the paper cannot be disintegrated in this manner, it must be ground.) The larger part of the pulped mass is now transferred to the flask described above, and the residue in the bottle washed into the flask with 10 c. c. of water.

Prepare turnings from the highest grade, pure stick zinc, which must be free from sulphur and arsenic. Treat 1 g. of these turnings with 10 c.c. of a dilute solution of copper sulphate containing about 0.002 g. actual copper. After a few minutes all the copper will have deposited and the turnings are then thoroughly washed to remove every trace of zinc sulphate. The turnings are added to the flask and a wad of cotton inserted in its neck. Between the two ground glass surfaces is then clamped a piece of filter paper about 2 inches square which has been perforated with small pin holes about ⅛ inch apart and which just before use is moistened with several drops of lead acetate solution. Finally a loose wad of cotton is placed in the tube above the paper.

The flask is placed on the steam bath and allowed to stay, with occasional shakings, for an hour. The filter paper is then removed from the neck of the flask and air dried. It is best compared with the standard test pieces by placing them side by side on a piece of white paper and covering them with a thin piece of clear white glass. The standard test pieces are prepared by using sulphur-free cotton in the flask instead of the disintegrated paper and adding to this definite volumes of a very weak solution of sodium thiosulphate whose strength is accurately known. The sulphur-free cotton is prepared by boiling absorbent cotton in weak caustic soda solution and washing thoroughly with distilled water.

Report—The amount of sulphur present as sulphide shall be reported as a percentage of the air-dry paper.

Determining Fiber Composition of Paper

The microscopical method for the preparation of paper specimens in order to determine the composition of the fiber which compose them is stated as follows:

Apparatus—A microscope capable of giving not less than 100 diameters magnification is necessary for determination of fiber composition. It is desirable that the microscope be of the compound type and that it have a mechanical stage.

Composition of Specimen—The specimen for test shall consist of pieces having a total area of not less than 5 square centimeters, cut from different portions of the test sample, so as to be representative of it.

Preparation for Examination—Place the specimen in a small beaker and completely cover it with a 0.5 per cent caustic soda or caustic potash solution; heat to boiling; transfer the contents of the beaker to a small 200 mesh metal sieve and wash thoroughly with water. Roll the moist pieces of paper into a ball and work between the fingers to loosen the fibers. Transfer to a test tube and shake until the fibers are completely separated. Pour a portion of the mixture into a second test tube and dilute to a fiber concentration of about 0.1 per cent. Transfer the fibers to a microscopic slide by means of a dropper consisting of a glass tube 6 inches (20 cm.) long and ¼ inch (6 mm.) internal diameter, fitted at one end with a rubber bulb. Thoroughly mix the fibers and water, quickly insert the dropper into the mixture 2 inches below the surface, expel two bubbles of air from the dropper, then fill the tube to a distance of about ½ inch (13 mm.). Transfer the contents of the dropper to the slide, completely emptying it. Repeat this procedure until the slide is uniformly covered with drops of this mixture, then place the slide in an air-bath until dry. Add sufficient stain to the dried fibers to thoroughly moisten them and press down on them a second slide or large cover glass. Remove excess moisture from the edges of the slides with absorbent paper. One slide shall be sufficient for ordinary determinations. In case of dispute not less than 3 slides shall be examined.

Methods of Observation—The prepared slide shall be examined microscopically, observations being made at various points in a straight line, twice lengthwise and four times crosswise of the slide, each series of observations starting at a different point. A magnification of not less than 100 diameters shall be used. A magnification of 100 diameters is desirable as with lower magnification it is difficult to observe the characteristic structure and shape of the fibers, both of which aid materially, in addition to the color developed by the stain, in identifying the fibers. The number of each kind of fiber present in at least 25 different fields and a total of not less than 200 fibers shall be counted. Frequent reference shall be made to standard slides of fibers of known proportion by weight in order to assign the correct weight values to the fibers found. After correcting for differences in weight, the amount of each kind of fiber present shall be computed as a percentage of the total fiber composition.

The foregoing is styled the official method. The following is an alternative method.

To avoid the undesirable personal equation involved in estimating the weight values of the fibers,

the following method of counting is recommended for trial with the view of adoption as the official method if found satisfactory: A round microscope cover glass at whose center is a very small black spot (point), or the intersection at right angles of fine lines or cross-hairs, shall be placed on the diaphragm of the eye-piece. The slide shall then be moved across the field of view, and each fiber, or part of a fiber, which passes directly under the spot shall be counted. If the fibers are long, some may pass under the spot more than once during the count, but they shall be counted each time, regardless of the number of times they pass under the spot.

Stains

Herzberg—This stain shall be used for all purposes except those given, as follows:

Lofton-Merritt—This stain shall be used for differentiating between unbleached sulphate (kraft) and unbleached sulphite fibers.

Bright—This stain shall be used for differentiating between bleached and unbleached pulps. (Details of preparation and use of the foregoing stains are to be given in TAPPI **Paper Testing Methods.**)

Report—The proportion of the various fibers found shall be reported in terms of the percentage of the total fiber composition, to the nearest 5 per cent. The following nomenclature which covers the fibers commonly dealt with shall be used in reporting results: Chemical wood fiber; chemical deciduous wood fiber; groundwood fiber; manila fiber; jute fiber; linen fiber; cotton fiber; esparto fiber; straw fiber.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Collapsing Strength of Thin Tubes and Pipes

SOMETIMES it is desired to compute the collapsing strength of tubes or pipes for ventilating, for handling dust, gases, shavings, etc.—tubes that are made of thin sheet metal and that are large in diameter. The writer suggests the following method:

Square the thickness of the metal in inches, multiply by 1600, divide by the square of the diameter of the tube, subtract the quotient from one (1) and then extract the square root of the remainder. (The result will always be less than one, of course. Thus, if the remainder is 0.64 the result will be 0.8.) Next subtract the square root from one (1) and multiply the remainder by 500. The result is the collapsing pressure in pounds per square inch.

When written as a mathematical formula we have this:

$$P=500\left[1-\sqrt{1-\frac{1600\,t^2}{D^2}}\right]$$

Where P=collapsing pressure in lb. per sq. in.
t=thickness of sheet metal inches;
D=diameter of pipe, inches.

This is a modification of the well known "Stewart formula" which was developed for greater thicknesses and heavier metals such as used in boilers, flanged or screw piping, and large vacuum apparatus.

The above formula was arrived at by comparing the Stewart formula with the following test results:

Diameter, inches	Thickness, inches	Noticeable distortion, lb. per sq. in.	Collapse, lb. per sq. in.
12	.0312	1.0	3.0
12	.0375	1.0	3.5
12	.05	2.5	7.5
15	.0375	1.5	3.0
15	.05	2.5	4.5
15	.062	3.0	7.5
15	.078	6.0	Uncollapsed at 10.0

According to the A. S. M. E. official publication "Mechanical Engineering," the above test results are credited to Walter S. Weeks, University of California, Berkeley, California.

Think and Avoid Accidents

ONE of the best rules for avoiding of accidents is wrapped up in one very important word of five letters. That word is, **"think."** Before doing something new, **think.** Anything that is dangerous should not be done mechanically. One should always **think** while being engaged in work involving risk.

To be a thinker, though, does not necessarily insure against accident. A famous professor of engineering fell off of a slowly-moving wagon not so many years ago and was run over and killed. Dr. Diesel, the inventor of the now famous Diesel engine, declared before the American Society of Mechanical Engineers that he was "nearly killed" at one time while operating one of his first engines. Many thinking people have been injured or killed. However, most accidents, even amongst those whom we would term "thinking people" are due to thoughtlessness, ignorance, or foolhardiness. Of the three, thoughtlessness is by far the principal offender.

In the paper mill plant, where work is liable to become hundrum and where there are certain operations that are more or less dangerous, all machines should be so made, if possible, that accidents will not result even from thoughtlessness. It is well known that gear noises, the swishing of belts, the humming

of motors and even the head-splitting riveting machines in boiler factories—all of them are causes of drowsiness when continued all day long, day after day. Thoughtlessness then becomes excusable.

But, before the drowsiness stage is reached, it is up to YOU, Mr. Engineer, to make safe all operations in which those under you are liable to "forget."

Higher Steam Pressures

AN interesting paper was read on this subject before a recent meeting of the American Society of Mechanical Engineers. In discussing the paper a prominent consulting engineer stated that in one plant a 5,000 kw. turbo-generator took steam at 250 lb. pressure and exhausted it at 80 lb. per sq. in., the exhaust being used in a process system. In that way the unit delivered power for less than one-half of one cent per kw.-hour, taking into consideration all charges—overhead, maintenance, depreciation, interest, etc.

Another prominent engineer stated that in industrial plants the "highest practicable steam pressure and temperature should always be considered." Because of the fact that but comparatively few plants are operating at high pressure and temperature at the present time there are no "standards" as yet, but they will naturally follow. Enough is already known about high pressure and high temperature operation so that engineers can closely predict the economies that will result. These things are no longer an entirely unknown quantity. We are pretty well through the experimental stage.

Can "Arches" Be Flat?

WHAT does a real "arch" look like? The dictionary says an arch is "a concave construction of stones or other materials over an open space." Arches have been built for thousands of years.

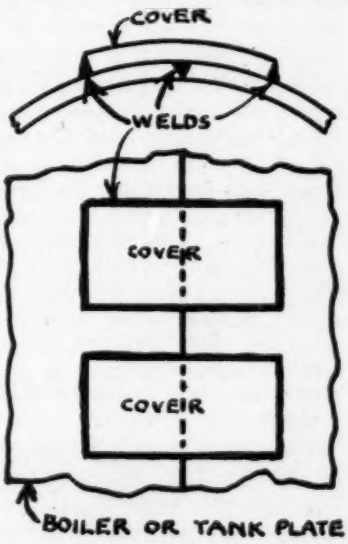
"Genuine" arches were once built in boiler furnaces. Today however, the word "arch" is rapidly becoming a misnomer. Look into a modern furnace and almost invariably the roof over the grate will be found to be perfectly flat—not "arched" at all. Yet, because of its arched ancestry, the name "arch" will probably be used for some time. I think the word "roof" should be used. Call it a "flat furnace roof" or an "arched furnace roof" as the case may be.

Actual arches preceded boilers by many centuries. But combustion arches were scarcely used until the advent of the Stirling boiler. Shortly after came the natural draft chain grate stoker and with that stoker came more combustion arches. Since then and until very recent years there has been but little improvement in the design and construction of combustion arches. In fact, many arches nearly 30 years old in design are still in use.

Originally the Stirling boiled arch consisted of two real old-style arches, namely (1) the ignition arch and (2) the baffle arch, which was placed above and in front of the ignition arch. The function of the ignition arch was to give more rapid and better ignition to the fuel by producing an intense heat reflection. The function of the secondary or baffle arch was to deflect the gases of combustion into the first bank of tubes and compel an earlier absorption of the heat, giving the gases a longer travel through the tubes with resulting higher heat transmission efficiency. This arch therefore performed no function in the combustion of the fuel. In designs calling for step-up arches the construction of furnaces was still further complicated.

An Excellent Welded Joint

FOR several years I have been warning users and prospective users about the use of electric and gas welded pressure vessels. My contention has been and still is that one can not be so certain of the safety of such vessels as one can be of the riveted variety.



In reply to a recent communication of mine concerning these dangers, an excellent method of welding pressure vessels is shown by R. T. Heinrici of Austria. He states that this method is employed by a prominent firm of boiler makers in Stwitzerland. They make important welded joints in the manner shown in the sketch herewith.

By welding cover plates outside and across the joint, as shown, the strength of the joint is made greater by 20 per cent than the strength of the plate itself. Consequently if there should be any failure, the failure would **not** occur in the joint but in the plate.

An advantage of using cover plates like this is that the welds of the plates are entirely visible from the outside so that if there should be any loosening of the plates, they can be repaired.

Where pressures are unusually high, Mr. Heinrici states that covers should be used both inside and outside of the vessel. To the writer this looks like good, sensible engineering and is a step forward in the science of welding cylindrical pressure vessels.

The use of thionyl chloride has been proposed for the waterproofing of cellulose and materials containing it. A German patent, 426,428, issued to R. Wolffenstein and A. Marcuse, covers such use.

Editorial Comment

By WILLIAM SIBLEY

On Selecting Your Foremen

The true executive is the one who can get others to do his work for him and do it properly. Without the ability to unfailingly exercise good judgment in the selection of men, no one can attain the fullest measure of commercial success. Great industrialists and leaders of all time owe much of their position and prominence to the high value of their subordinates. In every case the ability to recognize, obtain and retain exceptional personal service was one of the underlying principles of success.

More particularly is this true with the "higher-ups" —the officials, department heads and superintendents. Depending upon the nature of the organization it is more or less true with foremen, for it is these that constitute the "key men" of industry— the direct connecting link between management and production. A good superintendent or a good foreman may be incapable of extracting loyalty and efficiency from a gang of crooks, radicals and loafers, but a bad foreman—one who may be cowardly, loud mouthed, self righteous, insulting, "good fellow," or who is merely lacking in the qualities of leadership—can ruin the best bunch of men that ever worked.

Foreman selection would be a simpler matter and many industrial problems would be automatically eliminated, if the vagaries of human kind could be worked out on a scientific or mathematical basis. Fortunately, human nature is not so constituted, for which reason there is always present the element of chance in the selection of foremen. Personal judgment must assume the entire responsibility.

It is an exceedingly difficult thing to properly estimate a man's ability or leadership qualities. It is all the more difficult when that man has been in the employ of the firm for a number of years and is just now meriting promotion. Larger pay and responsibilities have as often broken as made men. For anyone to have worked for a long period under the guidance of another, the graceful and unabused assumption of authority is a trying, and too often impossible, task.

Employee good will is among the major assets of any concern. It is to be cherished by all men in executive or supervisory positions. Such good will cannot be had if the formation is arrogant or spineless, a "hail fellow well met" or a snobbish clam. Good will among employees will be lacking if the foreman fails to merit both the affection and respect of the men.

It is nearly always good policy to have two or three men in line for every foreman's place. How such men act as "straw bosses" when temporarily put in charge constitutes a splendid test of ability and will very often identify a man as being a capable foreman. Examples of mistaken judgment are often eliminated thereby. This is perhaps the easiest and least risky way of getting an accurate check on the younger men of the organization.

Recognition should always be given to the capabilities of a man. One who would make a splendid shipping room foreman would probably fail as a foreman of the drafting room. The man fitted for the power plant would doubtless prove a total failure in the assembly division.

To automatically sift potential foremen until both qualifications and limitations are known, to train these men thoroughly in the methods and practices of the business, then to impose temporary authority now and again to determine their ability to lead others, will provide any plant with foremen capable of developing loyalty and interest on the part of the men. And without employee loyalty there is little to be expected in the way of increased production or reduced cost.

Apprenticeship

RESTRICTED immigration has reduced the nation's manpower is the statement made by a bulletin recently issued by the Chamber of Commerce of the United States. This, together with the tendency for boys to drift into clerical or office work regardless of opportunity for future advancement, has caused a serious shortage of trained workmen, which shortage it is felt will continue to increase as time advances. All of which clearly indicates the growing need for apprenticeship encouragement and training.

As in everything else since before the present decade, apprenticeship has changed to meet changing conditions and demands. Notwithstanding, indeed we might say because of, the great growth of labor saving and aiding machinery there is abundant room for brains and skill in industry. American business men, in whatever line, can do nothing more important, either to their own individual business or to the welfare of all industry, than the educating and training of young men whose apparent abilities and prospects for success lie along industrial lines.

Not only does apprentice training provide a valuable source of supply from which foremen may be drawn and executives developed, but it creates a supply of trained workmen who are at once dependable, efficient and capable. The trained workman is invariably more loyal to his employer than the untrained man. Apprentice training thereby reduces labor turnover.

—— on Timely Subjects

Until comparatively recently it was considered that only the larger companies could profitably and successfully conduct apprentice training schools. This erroneous belief is happily being overthrown by the number of actual working cases that definitely prove the contrary. Many small concerns are today conducting training schools with a marked degree of success. Further, within the past few years a number of associations have attacked the problem by establishing such schools for all young men inclined to take advantage of the training thus afforded.

That immigration limitation is of great and far reaching benefit to the country few will deny. That it entails the obligation of more active interest and greater effort in the teaching and training of skilled and semi-skilled labor is also apparent. Every industrial executive should do everything in his power to further the work of apprenticeship training—work which will mean so much to the American industry of tomorrow.

Tardiness and Absenteeism

Throughout American industry, workers are absent from their tasks an average of 21 days per year of 300 working days, according to the most reliable statistics available. This 7 per cent average absenteeism record imposes a heavy burden on the employers of the nation and upon the country's production.

In addition to the loss through absenteeism is the larger, though incalculable, waste of tardiness. The time lost by workers in getting started at their jobs after the whistle blows constitutes, of itself, a great economic waste and one that is probably more serious than is commonly supposed.

There are many ways of reducing the costly operating elements of absenteeism and tardiness. These will vary with the institution since in some plants the factors will be far more serious than in others. Where employees are engaged in group work, in conveyed assembly operations, or on a piece work basis, tardiness is automatically reduced to a negligible factor. No industrial organization is entirely free from both, however, for the plan wherein tardiness has been minimized will doubtless show a higher absenteeism record.

Not infrequently tardiness is caused more by mismanagement than by worker's indifference or laggardness. The mere re-location of time clocks has, in some cases, greatly reduced tardiness. Workers are wont to consider themselves on time if they "punch in" before or as the whistle blows—entirely overlooking the amount of time consumed in getting from the clock to work. The simple operation of a machinist punching a clock, then walking to a distant part of the plant to get to his machine, very likely stopping on the way to exchange greetings with a fellow worker or to get a drink will, if continued over a period of months, amount to large and costly proportions in time and production value. Locating the time clocks so that they are as near as possible to the actual scene of operations will many times effect a material reduction in tardiness.

The old practice of "docking" or penalizing an employee for lost time is rapidly giving way to the more positive method of rewarding punctuality. In a great many plants a few years ago, and in some of today, the practice of penalizing a man a full quarter of an hour or every lost fraction thereof was employed. This rather negative measure for discouraging tardiness is now being discarded and the plan for paying bonuses, ranging from 2 to 10 per cent of the worker's earnings is being substituted. In the majority of cases the positive method has been found to be far more resultful.

Instead of a straight monetary reward, some plants allow a day's vacation to every employee having a perfect record for attendance and punctuality during the month. In figuring these records consideration should be given to the promptness displayed in getting to work as well as the actual clock record. Sometimes it is advisable to arrange a sliding scale of reward to encourage 95 per cent as well as 100 per cent records. If the bonus periods are too long an employee who has, for some very good reason, failed to qualify for the bonus or day's vacation for a particular period will be inclined to disregard his attendance and punctuality record for the remaining portion of the period, feeling that he has nothing to lose.

Absenteeism, like tardiness, can very often be traced to physical plant conditions. Ventilation, lighting, and sanitation are factors that contribute to the increase or decrease of absenteeism. Conditions in the homes of the workers, however, are equally contributory, and these should be tactfully investigated and remedied wherever possible.

The value of a good foreman is perhaps nowhere more clearly evident than in tardiness and absentee records. The foreman, being in direct contact with the men, is in the best possible position to effect reduction in these costly factors. Through him loyalty and interest can best be developed. Without employee loyalty and company interest no management can hope to minimize absenteeism or effect a reduction in tardiness.

The Great Co-operative Experiment at Montreal

How the Pulp and Paper Industry, the Canadian Government, and McGill University Have Formed a Coalition

By LOUIS E. WISE, PH.D.

Professor of Forest Chemistry at the New York State College of Forestry

ABUTTING the beautiful campus of McGill University in Montreal, and within hailing distance of the chemistry and engineering buildings, stands a queer structure, which appears to be in the final stages of collapse and disintegration. Its doors slope, its window frames are tilted at rakish angles, and it gives all appearances of being ready to topple over and give up the ghost. Dickens might have taken this house as the prototype for the dwelling in "Little Dorrit" which finally crashed into a mass of dust and bricks.

Were it not for the neat, highly polished brass plate fastened to this superannuated architectural wreck, no one would guess that it harbored the staff of the Forest Products Laboratory of the great Dominion of Canada. This scientific staff for over a decade, although threatened by settling floors and cracking ceilings, has done research work, the excellence of which has dignified these men in the eyes of the scientific world, despite the lack of dignity of their surroundings.

Not far from this decrepit main building stands a much trimmer, but rather inadequate, low, gray brick structure, surmounted by a queer little gable, which is somewhat reminiscent of well-built mews of the past century. This is the home of the Pulp and Paper Division of the Forest Products Laboratory, and here noteworthy researches have been carried out on the methods of pulping woods, on the manufacture of paper and on the physical and chemical properties of both the raw materials and the finished product. Only a month or two ago the laboratories in this building were severely damaged by fire, and the interior of the building, especially the upper floor, looks scarred and bleak.

The Chemistry Building at McGill—not far from the site of the proposed building

It was a great surprise to the writer, on viewing this rather dismal sight, to find all members of the staff in excellent spirits and hopeful in the extreme. The cause of this surprising optimism soon became apparent. The Pulp and Paper Division was to go into a new home, with every promise for adequate equipment, greatly increased facilities, and with proper provisions for future growth.

The story deserves to be told in some little detail, since it is quite unique, and more especially since it redounds to the credit of that splendid organization, the Canadian Pulp and Paper Association.

Story of the Coalition

For a number of years this association had been sympathetic towards fundamental research work in pulp and paper manufacture, and had watched the valiant struggles of the Forest Products Laboratory with keen interest. It had established a committee to look into the matter, and in 1924 entered into an agreement with the Canadian government to contribute $20,000 per annum (as a minimum) for five years, with a view towards stimulating and aiding the researches of the Pulp and Paper Division of the Forest Products Laboratory, which, the association felt, were of such immense value to the entire pulp and paper industry of Canada. Early in 1926, it became evident that the association's scheme was bearing fruit. The pulp and paper laboratories were improved and research work was speeded up.

Meanwhile another noteworthy event took place, this time within the faculties of McGill University, which had a marked effect on the recent actions of the Canadian Association. We refer to the establishment of the E. B. Eddy Professorship of Industrial and Cellulose Chemistry, which was founded under the provisions of Mrs. Eddy's will. The chemistry of cellulose was near to the hearts of all good Canadians. Cellulose is the principal component of wood, and wood is the raw material par excellence of Canadian industry. What wonder then, that McGill University was interested in the establishment of such a professorship. It would bring all assurance that Montreal could and would become the center of cellulose research on the North American continent, especially if a capable man could be found to fill this important chair, and if the interest of the Canadian Pulp and Paper Association could be assured. An excellent appointment was made when Professor Harold Hibbert, formerly of Yale University, and a recognized international authority on the chemistry of cellulose, was brought to McGill as Professor of Industrial and Cellulose Chemistry. Dr. Hibbert is not only an able research worker, but an energetic leader whose organizing ability was clearly demonstrated when he headed the Division of Cellulose Chemistry of the American Chemical Society several years ago. The Canadian association has shown its interest by providing liberally towards the proper maintenance of this newly appointed chair of cellulose chemistry. So here we have another phase of the great co-operative experiment.

But the climax is reached in the most recent development of the Canadian association's work. The officers and members of the association have the vision to see that without adequate housing facilities and without proper room for development, the best research project is likely to mark time or even to fail. Hence their proposed scheme for a new building.

Plans for the New Building

This new structure is to be erected on the site of the present

Forest Products Laboratory. It is to house the executive offices of the Canadian association, the entire staff of the Division of Pulp and Paper of the Forest Products Laboratory, and the laboratories and offices of the newly created chair of Industrial and Cellulose Chemistry of McGill University. The probable cost of construction, plus the endowment, will be $350,000, and the thought of the association is that the new building must be not only erected, but properly maintained and cared for.

Our understanding is that the proposed structure (built fireproof to obviate any recurrence of the recent fire losses

The beautiful campus of McGill University, future home of the Pulp and Paper Industry

incurred in the present building) will be some 55 feet wide and 160 feet long. It will probably have three floors, the upper floors being devoted to the libraries and research laboratories of the three allied groups of occupants. Here we are to have a worthy triumvirate that should work to the very best interests of the Canadian industry. Here we note (perhaps for the first time in history) a coalition of the pure scientists of the university, the applied scientists of the government laboratories, and the industrialists themselves.

The Why and How of the Project

A number of questions must naturally come to the mind of the critical (possibly skeptical) reader as he views this unusual coalition. He may well ask, "Is this unusual expenditure warranted, and if so how is the association going to raise the money for such a colosal proposition?"

The first part of the question has been answered to the satisfaction of a large group of practical business men in the association, who are in the habit of thinking in terms of dollars and cents. These men know that without research work their industrial enterprises come to a standstill. Their observations of the ability and integrity of the technical men in the government service have not been made hastily. They are convinced that the plan is not only feasible but imperative for the future of the industry. Then again they have certain precedents to go by. Other associations, made up of large numbers of individual firms, have contributed heavily as units to certain research projects, and have found these contributions to be sound investments. The Tanner's association, the canning industry, the Baker's association (Institute of Baking) all maintain research laboratories. Why not then the Canadian Pulp and Paper Association? The answer seems obvious.

The second part of the question, as to how the money can be raised, is largely answered at this time of writing. Some twelve or thirteen powerful pulp and paper companies, members of the association, have already subscribed over $200,000 of a proposed bond issue for the $350,000 which is to finance the project of the new building. The building committee of the association has evolved a carefully considered plan, which is briefly this: A company will be incorporated, twenty-year first mortgage bonds (bearing interest at 6 per cent) will be issued, and the amount required to retire these bonds will be met (together with interest charges) by a special annual assessment made upon the members of the association. Quite evidently the practical men in the Canadian industry are convinced that the expenditure is warranted and feasible.

The question may now arise "What part does McGill University play in the experiment which is to be conducted on her campus?" The university has as her spokesman Sir Arthur W. Currie, principal and vice-chancellor, and he has expressed his views fully in a letter to the secretary of the association. In it he writes: "A suitable site will be selected by the university, and when agreed upon by the university and the association will be leased to the Pulp and Paper Association for a term of forty years at an annual rental of $1 per annum."

What happens at the end of these forty years, with the bonds redeemed and the lease expired? McGill becomes the owner of the building and equipment, as is her just due.

And what of the problems that will be tackled in this ideal laboratory building of the future? Those lie somewhat beyond the province of our article and are somewhat speculative. Such an institution might undertake the proper utilization for the pulp and paper industry of such waste conifers as jackpine and lodge pole pine. It might make effective studies on the old, old problem of satisfactorily utilizing waste sulphite liquor. It might undertake further studies on the mechanism of the pulp making processes. These are only a few possibilities that come to mind. Hundreds of such problems must have presented themselves, with a fair hope of solution, to the minds of those men who had the courage and vision to inaugurate the great co-operative experiment at Montreal. More power to them! May they set an example which other associated industries—yes, other pulp and paper associations—have the vision and courage to follow.

A National Research Endowment

Such able executives as General J. J. Carty, vice president of the American Telephone and Telegraph Company, and Frank B. Jewett, president of the Bell Telephone Laboratories, are giving their unqualified support to the present efforts of the National Research Endowment of the National Academy of Sciences, to raise $20,000,000 for research in pure science. A notable group of men compose the board of trustees directing this undertaking with Herbert Hoover as their chairman.

The laudable ambitions and aims of the National Research Endowment are among the most constructive and progressive of the present day. Its purpose is to increase and strengthen American contributions to the mathematical, physical and biological sciences by the creation of a national fund for skilled investigators, who will be selected by the best qualified authorities in the National Academy of Sciences, from among the ablest and most productive investigators engaged in pure science research. Appropriations will be made for a fixed period of years, subject to renewal if circumstances warrant it.

Associated with Mr. Hoover in this undertaking are Albert A. Michelson, Gano Dunn, Vernon Kellogg, Elihu Root, Andrew W. Mellon, Charles E. Hughes, John W. Davis, Col. Edward M. House, Julius Rosenwald, Cameron Forbes, Felix Warburg, Henry S. Pritchett, Robert A. Millikan, John C. Merriam, Owen D. Young, Henry M. Robinson, Simon Flexner, John J. Carty, William H. Welch, James H. Breasted, L. R. Jones, A. B. Lamb, Oswald Veblen, Thomas H. Morgan and George E. Hale.

Continuous Grinders[1]

Advantages Gained from Uninterrupted Operation

DR. MAX WINTERMEYER

IT IS now quite a few years since the first continuous grinder was built and put out on the market. Since then, there have been many improvements made in this type of machine, for the advantages to be gained from uninterrupted operation of the grinder are so important that the design of such grinders has been given considerable attention with the result that new types are constantly being evolved.

The history of continuous grinder design is centered around overcoming certain difficulties. One of these was the fact that in the ordinary type of grinder, it often happened that the wooden logs would jam together in the feeding device with the result that the operation of the machine had to be suspended. This condition is not found in the magazine type of grinder. Bridging does not take place along the sides of the magazine, but it was found nevertheless that bridging did take place in the bottom of the magazine, and this constituted one of the difficulties that had to be overcome before a perfect design was evolved. The solution of this difficulty is a comparatively easy matter when the width of the grinding surface is small, but where it is extensive then it is an entirely different proposition. (In the original article the design of the grinder is traced from the very first continuous types to those that are used at the present time in order to show just how these difficulties were finally overcome. Trans.)

An interesting type of grinder is shown in the accompanying illustration. This is of Swedish origin. In this case the magazine shaft is closed at the top by means of a cover which is pressed down on top of the wood by means of springs. These springs can be seen at (4). The magazine itself is of conical shape and harrows together at the top. At the very top there is a pressure box (9) which is actuated by hydraulic means, the pressure being transmitted in suitable manner to the wood in the magazine. Continuity of grinding is secured in this apparatus due to the fact that when the pressure piston moves backwards in its cylinder, the clamping devices, shown at (13), maintain the wood in a compressed status against the surface of the grindstone. This is, of course, practical, as far as it goes, but it is not possible to regulate in this type of apparatus the pressure that is applied to the wood against the grinding surface. This has always been an important and difficult detail in the design of the continuous grinders.

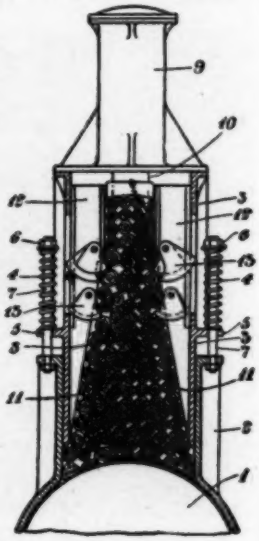
An interesting feature of the operation of the continuous grinder, and in fact of any grinder, is the consumption of power in the grinding process. Various tests have been made on this subject and the following table gives the results that were obtained with different sizes of continuous grinders, as manufactured by the Voith company in Germany.

SIZE, PRODUCTION AND ENERGY CONSUMPTION OF THE CONTINUOUS GRINDER

Diameter of stone in millimeters	Length of wood in meters	Pressure surface width in millimeters	R.P.M. at 18 meters stone speed	Consumption of energy in H.P.	Output of air dried white ground wood in kilograms per 24 hours
1400	0.5	600 to 700	150 to 250	100 to 250	1,800 to 5,000
1500	0.5	1000	230	250 to 500	4,000 to 10,000
1500	0.66	1000	230	300 to 600	6,000 to 12,000
1500	1.1	1000	230	500 to 1,000	10,000 to 20,000
1700	1.1	1200	200	600 to 1,200	12,000 to 24,000
1500	4 foot	1000	230	600 to 1,200	12,000 to 24,000
1700	4 foot	1200	200	900 to 1,500	15,000 to 30,000

The question is often asked just how much power is required to operate a continuous grinder to produce a unit weight of air-dried wood in a period of twenty-four hours. This question can only be asked if the existing conditions under the grinder operates are known and if the character of the ground wood required is taken into consideration. Then again, a distinction must be made between the energy requirements of the grinder alone and of the grinder together with the various auxiliary machines that are employed for putting the wood into condition to be ground. Naturally the type of stone used and the sharpness of the stone are also important factors that must be considered in this connection.

Thus, in the case of the Voith grinder, which is known to be a standard type, the grinding of ordinary brown mechanical wood at a temperature of 60 to 65 degrees C., required the consumption of 3.8 to 4.5 horsepower per kilogram of the air-dried wood. Tests were also made with various grades of white mechanical wood pulp. Thus, that type which was suited for board making required 4 to 5 horsepower per kilogram of the dried wood, while in grinding pulp for making finer grades of writing and printing papers, the consumption of power reached as high as six to seven horsepower per kilogram of the dry wood. Special grades of pulps required seven to eight horsepower and the highest grade of pulp, used in the manufacture of art printing papers, required from eight to nine horsepower per kilogram of the air-dried wood.



Even Temperature Maintained

One advantage that has been observed in the operation of the continuous type of grinder is that the temperature of grinding is maintained more evenly with the result that a better better grade of product is obtained. The temperature was maintained within a variation of one degree C. and no automatic means were used in controlling the flow of the spray water to the grinder. It is a fact that when the difference or variation in temperature amounts to five degrees C. the properties of the pulp will be adversely affected, with the result that it becomes very difficult to manufacture a paper sheet which is uniform in composition and strength, particularly when operating on high speed paper machines. It may be said that the temperature is the main indicator of the uniformity of the grinding process and of the pulp produced. For while it is not the only controlling factor, nevertheless, differences in the other factors will be manifested in a change in temperature. Thus a change in the sharpness of the stone or in the quantity of spray water being fed to the grinder will be immediately manifested in a change in temperature.

A test is described in which a continuous grinder was used of the Berger and Dittrich type. From 500 to 550 horsepower were available for driving the grinder and the speed of the stone was 150 r. p. m. Naturally at this low angular speed the circumferential velocity of the stone is small, which means that a higher pressure must be used against the wood.

It was found that this type of grinder would produce twenty per cent more stock of a better quality with longer fibers than with the multiple press grinders that have been used for this purpose. The power requirements of one of these grinders, which was installed in a German pulp mill, were approximately five horsepower per hundred kilograms of the air-dried white mechanical wood per twenty-four hours.

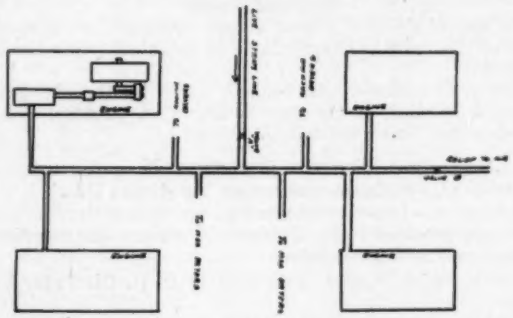
It has also been found that it is immaterial as to the method that is employed for pressing the wood log against the surface of the grindstone. The principal condition is that the log is pressed tightly against the stone and that the wood be held firmly in this position. It is also a fact that it has been found that the methods that are available for feeding the wood in a constant stream to the grindstone and in maintaining the logs at a constant pressure against the stone have given very favorable results in the case of the continuous type of grinder. The various processes that take place in the loading shaft of the continuous grinder are always visible to the eye, and hence it is possible to notice any trouble immediately.

[1]Abstracted from the Article Appearing in Der Papierfabrikant, 1926, 65-73.

Practical Helps for the Mill Man

Exhaust Steam Header

PAPER mills operating with steam engines where there are two or more engines will do well to consider the following exhaust steam hook-up: The exhaust steam from each engine, instead of being led directly to the dryers of the machine which it drives, is led to the exhaust steam header for the entire mill.



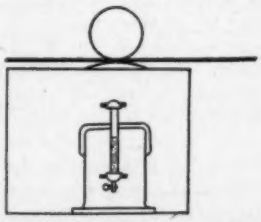
From this header the drying steam for each machine is taken. The live steam line is connected to this header with an arrangement for automatic supply if the exhaust steam is insufficient for drying purposes. An automatic release to the air is provided to prevent back pressure from building up. One advantage of this arrangement is that live steam is supplied at one point only and can be metered at that point to show consumption.

Bakelite Suction Box Covers

USERS of felts are beginning to adopt Bakelite as a material for suction box covers. Those who have already installed them are most enthusiastic and predict that on covers for felt suction boxes there will be no need for planing. There is no record available of their having been tried as covers for wire suction boxes. It is difficult to imagine their standing up under the wear on the Fourdrinier, but a trial would soon determine the possibilities.

An Approximate Method of Determining the Changes in Freeness of Slowness of Stock

AN INTERESTING device is in use on a machine having only one cylinder for forming the paper made. A gauge glass is connected to the vat so as to show the level of water in the cylinder. When the stock gets a little freer, the level of the water in the gauge glass goes up and when the stock gets slower the level of the water in the gauge glass goes down. This is only an approximate method of watching the freeness of the stock, as it is easy to conceive of other factors on the machine changing the level of the water in the gauge glass. However, with normal operating conditions, it gives an excellent check on the relative freeness of the stock being supplied to the machine. It is possible that this device might be installed in other places where other operating conditions are usually the same to give a rough check on the freeness of the stock—on wet machines or deckers in a screen room, for instance.

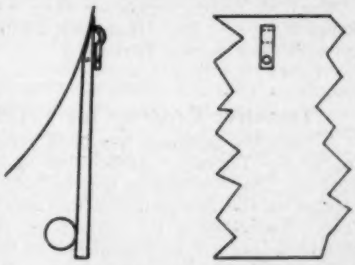


Safety Warning on Elevator

SAVE the life of that bright employee who sticks his head out into the elevator shaft to see where the elevator is, only to find that it is right where it will hit him on the head. This can be done by attaching some strips of old dryer canvas to the bottom of the elevator at the point where the canvas will hit the man with his head out in the shaft soon enough to make him draw his skull in out of trouble. Little pieces of wood fastened at the bottom of the strips will keep them straight and give just enough notice that something else is going to hit pretty soon.

Doctor Adjustment

IT IS imperative that the doctor on a sweat dryer fit perfectly. Otherwise on a break, the paper will follow the dryer and cause a great deal of lost time. To help in making the doctor fit, a small piece of metal of the shape shown in the illustration may be attached to the doctor in places where the point of the blade fails to touch the dryer. These can be placed wherever needed by using a small cap screw to secure them. The nose of the little metal finger is bent down so as to exert a little pressure on the part of the blade where it is placed and this helps straighten the blade.

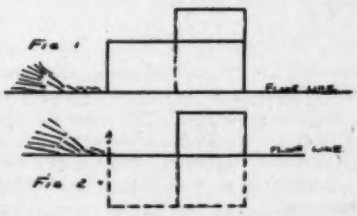


Alum Circulating System

ONE mill has an interesting home-made alum circulating system. The lump or pulverized alum is reduced to a solution in a tank on the floor above the beater room. Old rubber hose is used for the pipe line and the alum is conveyed to the beaters in solution. The use of the alum solution gives much better results from the alum used and there is a considerable economy over the old system of putting the alum in the beaters from a barrel where a portion of the alum went onto the floor.

Location of Breaker Beater

VISITS to mills having breaker beaters, or where old papers are fed into any kind of a beater, reveal interesting situations in regard to the location of the beater with reference to labor-saving. Figure 1 in the accompanying diagram shows a very frequent condition where the papers, after the bundle has been broken open, have to be picked up off of the floor and thrown into the beater. Figure 2 shows what seems to be a more logical arrangement of a beater into which material has to be loaded over the side.



A probable objection which may be made to having the top of the side of the beater at floor level is that the men loading the beater are more prone to throw string, wire and other foreign substances into the beater with this arrangement. Laborers who are careless enough to do this will do it equally often with the other arrangement by heaving armloads into the beater at a time. A low curb around the beater would eliminate such objects as might by honest mistake get pushed into the tub. It seems as if even in fine paper mills such a curb would be enough to keep objectionable foreign material from being pushed in from the floor when dumping box truckloads of rope or rag stock directly into the beater without having to lift, fork or convey the material.

Superintendents Plan Joint Board Meeting

Plans are being laid by Henry Burt, chairman of the Western Board division, and George H. Pountain, chairman of the Michigan division of superintendents, for a joint meeting of the two divisions to be held, probably about the third week in September, at Battle Creek, Michigan. R. E. Eminger, national secretary of the American Paper and Pulp Mill Superintendents' Association, is assisting in arrangements for the meeting.

Plans are also under way by William Brydges, chairman of the Northern New York division of superintendents, for a meeting of his division at a date not far distant.

The following gentlemen have been appointed and accepted as members at large of the executive committee of the American Paper and Pulp Mill Superintendents' Association:

H. W. Server, Miami Paper Co., West Carltton, Ohio. (The Miami Valley Division.)

Charles C. Champion, Berkshire Hills Paper Co., Adams, Mass. (Conn. Valley Division.)

Ward M. Smith, Container Corp. of America, Philadelphia Paper Mfg. Co., Div. Manayunk, Philadelphia, Penn. (Pennsylvania-New Jersey Division.)

Tentative Program for TAPPI Fall Meeting

A tentative program has been arranged for the fall meeting of the Technical Association of the Pulp and Paper Industry. The convention will be held at York, Pa., which is located on the Pennsylvania Railroad with good train service from all sections of the country, on September 14, 15 and 16. Headquarters will be established at the Yorktowne Hotel, and ample hotel accommodations can be secured. The local committee will be glad to handle reservations—address Horace Keesey, of the Schmidt & Ault Paper Co., York, Pa. Arrangements have been made, if sufficient patronage is assured, for special sleeping cars leaving New York City at 11:05 p. m. on Monday night, September 13, and arriving in York at 7:37 a. m., September 14.

PROGRAM

Tuesday, September 14

(All business sessions in Ballroom, Yorktowne Hotel)

8:30 a. m.-10:00 a. m.—Registration, Lobby, Yorktowne.

9:30 a. m.-12:30 p. m.—Business sessions.

1:00 p. m.—Special trolley cars to York Haven.

1:30 p. m.—Luncheon, as guests of York Haven Paper Co.

2:30 p. m.—Inspection of—

A—Plant of York Haven Paper Company, manufacturers of sulphite pulp, fibre and specialty papers.

B—Hydraulic power plant of the Metropolitan Edison Company.

C—Steam generating station of Metropolitan Edison Company at Middletown, Pa., which has one of the largest and most efficient pulverized fuel installations in the East. (Reached by boat and automobile. Advance notice of intention to make this trip necessary.)

7:30 p. m.—T. A. P. P. I. banquet at the Yorktowne (ladies will attend).

Wednesday, September 15

(All business sessions to be held at York Country Club)

9:00 a. m.—Busses leave for Country Club.

9:30 a. m.—Business sessions.

1:00 p. m.—Buffet luncheon at Country Club.

2:00-5:00 p. m.—Visits to following York industries as selected:

A—Schmidt & Ault Paper Company—bogus, building, board, wrapping, screening and specialties, two fourdriniers and two cylinder machines.

B—York Manufacturing Company—world's largest manufacturers of refrigerating and ice-making machinery.

C—S. Morgan Smith Company—the largest and oldest plant in the world devoted exclusively to the manufacture of hydraulic turbines, which are in use in many of the paper and pulp mills.

D—York Card & Paper Company—manufacturers of all grades of wall paper.

E—York Printing Company—printing, planning, designing, binding.

F—Hardinge Company—manufacturers of thickeners, clarifiers, pulverizers, rotary dryers and sprays.

G—Keystone Roofing Manufacturing Company—waterproof, roofing and insulating papers, asphalt shingles and specialties.

H—Penn Fibreboard Corporation—boards, felts, mill wrappers and building papers; one 120-inch Downingtown machine.

I—Gilbert Wall Paper Company—manufacturers of paper hangings.

J—York Water Company's Impounding Basin—fine example of forestation.

York's diversified industries not listed above will welcome any visitors.

Golf and Tennis

The use of the golf course at the Country Club upon payment of the usual fee is available to those attending the convention.

7:30 p. m.—Dinner and smoker, given by the above-mentioned companies, at the club house. (An informal evening for shop talk or committee meetings.)

Thursday, September 16

9:00 a. m.—Business meeting at Yorktowne Hotel.

11:00 a. m.—Leave by automobile for Spring Grove.

Visit to plant of P. H. Glatfelter Company—manufacturers of soda pulp and book papers.

1:30 p. m.—Luncheon, as guests of P. H. Glatfelter Company.

3:00 p. m.—Trip to Battlefield of Gettysburg, 28 miles distant, returning to York about 7 p. m., in time to make railroad connections for all points.

An excellent opportunity will be afforded those who are planning to attend the fall meeting of the Technical Association to extend their trip, if desired, to Washington, D. C., or the Sesqui-Centennial at Philadelphia, as each of these points is only three hours distant from New York by train, and can also be reached over very good roads by those who may motor to the convention.

The Bureau of Standards and the Government Printing Office at Washington are always glad to welcome those affiliated with the paper industry, and are open for inspection at all times.

The Sesqui-Centennial in Philadelphia will be fully completed by the end of September, and will be well worth the spending of a few days.

Local Committee

The local committee is as follows: P. H. Glatfelter, chairman, P. H. Glatfelter Co.; W. E. Byron Baker, York Haven Paper Co.; Levi A. Bupp, Penn Fibreboard Corp.; J. C. Eisenhart, York Card & Paper Co.; F. E. Finch, Hardinge Co.; P. J. Gilbert, Gilbert Wall Paper Co.; R. J. Hilliker, York Manufacturing Co.; Horace Keesey, Schmidt & Ault Paper Co.; W. S. McClellan, P. H. Glatfelter Co.; W. A. Pitts, York Haven Paper Co.; F. W. Preston, Keystone Roofing Manufacturing Co.; James Rudisill, Sr., York Printing Co.; H. D. Schmidt, Schmidt & Ault Paper Co.; Beauchamp Smith, S. Morgan Smith Co.; H. W. Stokes, York Haven Paper Co.

Mid-West Box in Container Corporation

Announcement was made in the July issue of THE PAPER INDUSTRY, of the consolidation of the container plants of the Chicago Mill and Lumber Co., of Chicago, and the Philadelphia Paper Manufacturing Co., of Philadelphia, in a corporation known as the Container Corporation of America. The new company has also purchased the controlling interest of the Mid-West Box Co. and the Cincinnati Corrugated Box Company. The Mid-West Box Company will maintain its corporate existence however and be operated by its present officials, with J. P. Brunt as president and E. R. Hankins as vice-president.

The general offices of the Container Corporation of America and the Mid-West Box Co. will be located, after September 1, 1926, on the 9th floor of the Conway Building, 111 West Washington Street, Chicago.

News Briefs from Washington

Bureau of Standards Completes Tests on Sizing

The Bureau of Standards has recently completed a series of preliminary tests on the surface sizing of paper, which show that such sizing effects marked changes in the strength and resistance to wear of paper so treated. During the investigational work on the manufacture of rag papers in the bureau's experimental mill, papers were produced which had at a weight of 22.5 pounds for a 17 by 22-inch sheet a minimum folding endurance of 2,500 double folds for a 100 per cent cotton fiber paper, and up to 5,000 double folds for a paper of 75:25 linen-cotton fiber ratio, these tests being made on the unsized papers. Ordinary tub sizing with medium grades of animal glue added generally from 1,000 to 1,500 more double folds to the tests of the unsized papers. These folding endurance tests were made at 65 per cent relative humidity. The results in general of the tests of surface sizing indicate that with any given paper (1) the bursting strength increases with increased retention of the glue; (2) the folding endurance increases with increasing glue content to a certain point and then decreases; (3) the resistance to water and to wet rubbing of glue-sized papers may be markedly increased by treatment with glue hardening or tanning materials, such as formaldehyde, but such treatment requires careful control lest the folding endurance be adversely affected; (4) the folding endurance of both sized and unsized papers, whether or not hardening agents have been used, may be increased by the addition of certain softening agents, such as glycerine or non-drying oils; and (5) a limited number of tests check outside opinions that the effect of glycerine treatments as ordinarily applied on the folding endurance of paper is comparatively short lived. A number of variables in paper making processes affect the degree of sizing imparted by immersion of the paper in animal glue, and to these must be added the influence of variations in the size itself. Tests show that sizing with glue made from hide cuttings does not produce papers noticeably different from those tub sized with commercial glues. It would appear that the use of uniform commercial glues with known characteristics should aid in maintaining control of some of the variables of the tub-sizing process.

The preliminary study shows that in the application of tub sizing and chemical treatment processes to different types of papers there is required an exact knowledge of all the factors involved in order to control the improvement of qualities of papers along the desired lines. The bureau plans further study of these factors.

Consular Reports

Argentina Threatens Loss of Market—The office of the Commercial Attache at Buenos Aires, Argentina, reports that contracts for rotogravure paper now placed with American exporters for supplying certain Argentine publications will probably go to German manufacturers at the end of the year unless American prices on this product are lowered somewhat. American paper, considered very suitable for the Argentine market, is being supplied at 13.8 gold pesos per hundred kilos, while German paper brings 10.4 pesos, with other paper selling at nearly 25 per cent less than the American. It is consequently believed that new contracts entered into during the latter part of the year will be placed with European manufacturers. The German paper is barrel packed, having wood slats completely round the roll, while American paper is coming in with wood ends on the rolls only.

Strawboard Mill for Federated Malay States—A copy of the "Siam Observer," dated May 28, 1926, states that Mr. Tan Kah Kee, a Singapore manufacturer and industrialist, has decided to spend a considerable sum on the erection and financing of a mill for the manufacture of paper from rice straw in South Jahore, Federated Malay States, the original information having come from the "Straits Times." The site of the new mill is to be Senai, about fifteen miles above Johore Bahru, where Mr. Tan has purchased about 125 acres of land for the purpose.

Orders for machinery were placed in April, with a Swiss firm, and present indications are that the mill will begin operations about January of 1927. The cost of the machinery ordered is expected to approximate $800,000, and it will be erected under the supervision of a Swiss engineer.

The mill will probably be in charge of a Chinese who has graduated from an American university, and who expects to spend considerable time in a paper-making mill in Europe.

The new mill is expected to use about forty tons of paddy stalks per day in the production of fifteen tons of straw paper and straw board. This raw material is to be supplied entirely by the Mayal rice growing districts through local collection.

The water to be used in this plant will be obtained from the Senai River, and papers of all grades are to be produced. It is to be noted that the Chinese Daily Journal of Commerce, which is printed and published by Mr. Tan, will procure its supply of newsprint from the Johore mill. This mill represents an entirely new industry, as far as Malaya is concerned, inasmuch as no similar modern plant exists in either the Federated or Unfederated States or the Archipelago, except one situated at Padalarang near Bandoeng in Java, the products of which are used practically entirely by the Netherlands East Indian Government.

New Cellulose Mill for Finland—Consul J. F. McGurk at Helsingfors, Finland, states that the Haarlan Paperitehdas O/Y. of Tammerfors have completed plans to construct a new cellulose mill which, complete, will cost about 28,000,000 Finmarks (approximately $750,000). The buildings will include a pulp mill, machine and power plant, water station and sulphur burning tower. Quarters for employees costing 2,000,000 Finmarks will also be erected. According to the contract, the buildings should be completed by December, 1926, and production started early in February, 1927. The managing director will be Mr. J. E. Heiskanen, who, with Mr. Haarla, planned the new project.

Tasmania Urging Development of Paper Industry—Assistant Trade Commissioner Foster at Melbourne, Australia, states that the Van Diemen's Land Company, at the request of the Tasmanian Government, has extended to July 1 the option given to Mr. Gerald Mussen for the purchase from it of timber areas. This reveals how anxious the Tasmanian Ministry is that a pulp and paper industry be developed in the State. In his report on the financial condition of Tasmania, Sir Nicholas Lockyer expressed strong disapproval of the Governments' action, inasmuch as the State guarantee of interest on debentures to be issued for the purpose of assisting the enterprise would involve a heavy and, in his opinion, needless responsibility. Further reports from Tasmania now state that another company is making arrangements for the establishment of a pulp industry there. This company is reported to have purchased some of the Huon Timber Company's property and buildings in Southern Tasmania, where it is intended to locate the plant. Part of it will be used at first for experimental purposes.

Look Out for This Fraud!—At the request of the Division of Commercial Laws of the Bureau of Foreign and Domestic Commerce a fraud order has been issued by the Post Office Department against J. A. McLeod of Georgetown, British Guiana, who, during the past four years, has obtained sample assortments from numerous American exporters with no intention of ever making payment. Following the policy of the Post Office Department, the fullest publicity is being given the issuance of this order. A number of paper exporters are said to have suffered from the operations of this individual.

Where interiors are painted with this

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Made by the exclusive Rice Process, Barreled Sunlight is guaranteed to remain white longer than any gloss paint or enamel, domestic or foreign, applied under the same conditions—also, not to flake or scale if properly applied. It is economical in application, too, flowing on freely with brush or spray at the *lowest cost per square foot of surface covered.*

These are the practical reasons why thousands of industrial plants prefer Barreled Sunlight to any other paint for their ceilings and walls.

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Measuring Tractive Power of Belts

The surprising effect of large arcs of belt contact on pulleys, not always appreciated, is convincingly demonstrated by means of a simple apparatus which has been made by F. L. Smidth & Co., 50 Church Street, New York City, manufacturers of the Lenix Drive.

The apparatus, illustrated in Figure 1, consists of a stand (A), mounted on a base. The shaft (C), free to revolve on ball bearings mounted on the stand, is fitted at one end with a cast iron pulley (D), and at the other end with a pointer (E) and a rod (F), to which is attached a weight (G). The belt wrapper—Lenix—(H) and its arm is mounted in a fixed position to a sleeve of the stand (A). The belt (J), the weight (K) and a circular scale constitutes the remainder of the apparatus.

Figures 2 and 3 illustrate belt applications with 180° and 250° arc of belt contact respectively.

In Figure 2 is shown the equivalent of an ordinary open belt drive with 180° arc of belt contact. Constant initial tension is established by the counter weight (K), and the maximum torque the belt will transmit under these circumstances is found by forcing the belt ring down with the thumb until the weight has deflected to a point where the belt begins to slip. This point is found to be equivalent to a 40° deflection on the scale.

In Figure 3 is shown the equivalent of a flexible idler system with 250° arc of belt contact. With this arrangement, the belt is passed around the idler—Lenix—pulley so as to establish a 250° arc of belt contact. The initial tension is the same as in Figure 2, because the weight (K) is unchanged.

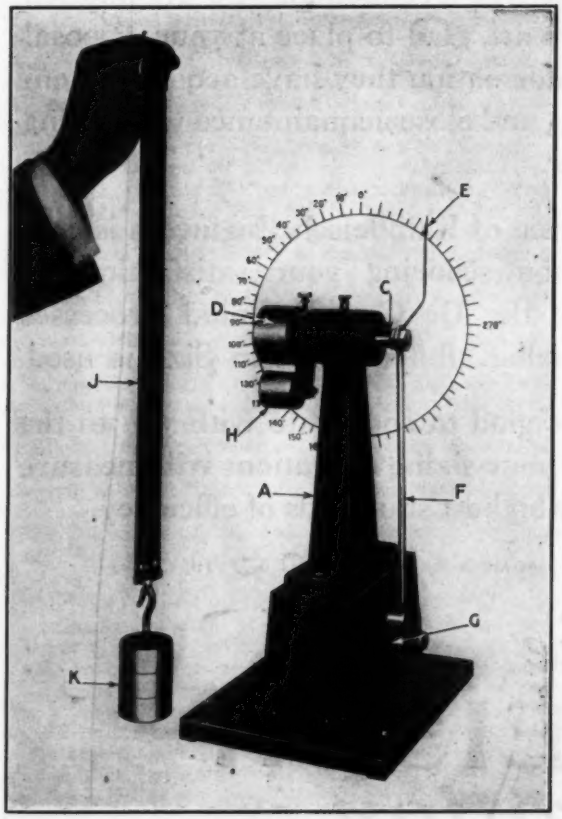

Figure 1

Again the belt ring is forced down with the thumb until the weight has deflected to a point where the belt begins to slip. This point is now found to be equivalent to a 90° deflection on the scale.

Because of the simplicity of the test apparatus, all doubt is satisfied as to the truth of the demonstration and the results obtained. There should be no question as to the fact that with a fixed initial tension (G), the increase in the arc of the belt contact from 180° to 250° surprisingly increases the tractive or gripping power of the belt. This

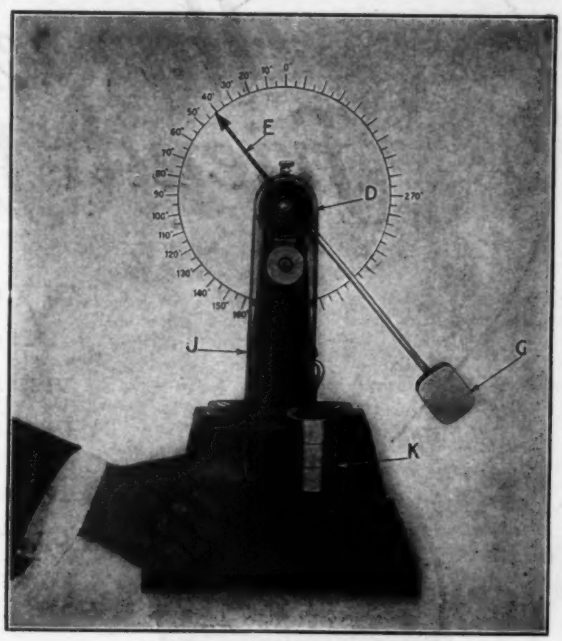

Figure 2

has not always been appreciated but has for the last twenty years been the fundamental principle of the Lenix Drive and the basis of its success and increasing popularity.

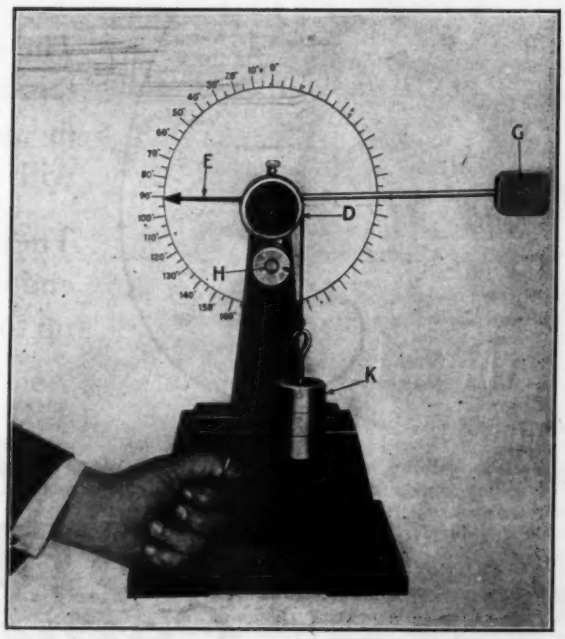

Figure 3

Figure 4 illustrates how the foregoing principle is applied in practice. In addition to increasing the tractive or gripping power of the belt, the flexible idler system—Lenix—eliminates belt slippage; maintains automatically, constantly and accurately the tension in the slack side of the belt; automatically compensates for changes in the length of the belt due to atmospheric or load conditions; permits of saving

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YOU secure dependable results from the use of Kalbfleisch Rosin Size. The service that you also get adds to the advantages of this sizing.

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See page 466 in the 1926 Paper and Pulp Mill Catalog

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in floor space, building space and belting because of freedom in location of pulleys; saves bearing friction, lubrication and renewals of bearings because of reduced bearing pressures and

Figure 4

permits use of high pulley ratios, ratios up to 1:15 being common.

A Combination Method of Burning Coal

A very ingenious method is employed by the Pulverzone, the newest type of coal burning equipment manufactured by the Cokal Stoker Corporation, Wrigley Building, Chicago, by which the advantages of pulverized coal burning are obtained without the necessity for pulverizing the coal or drying it.

The Pulverzone combines in one apparatus the three most approved methods of burning coal: (1) pulverized coal burning; (2) spread method; (3) Coking method. In this way, the Pulverzone is able to burn the smaller lumps and fines in suspension as with powdered coal burning. The heavier coal falls down at the front while the intermediate sizes are automatically spread over the rear section of the fuel bed. The standard method of the Cokal stoker is retained.

Standard screenings—the cheapest size of coal are used, and Lignite can also be burned very economically upon this equipment. By means of the Cokal turbulators, turbulence is obtained "before, at and after ignition," with full utilization of furnace volume, so resulting in very high combustion efficiency and entire absence of smoke. The Pulverzone is capable of maintaining 12½ to 14½ CO_2 at ratings of 350 per cent of boiler capacity. Such enormous overloads are possible because of the complete ignition of the volatile, the intimate mixing of oxygen and gases and the partial combustion of the small coal in suspension. Another factor contributing to such high capacity is that the fuel bed is always maintained porous because the small coal which ordinarily clogs up the grate is now burned in suspension. Another feature is that the larger lumps which catch fire while in motion are partially burned before they fall upon the fuel bed. In this way ash pit siftings have been eliminated and loss of unburned carbon minimized.

The Pulverzone can be installed on all return tubular and water-tube boilers from 50 up to 2,000 horsepower.

Power Show to Reflect Advances

Contemplation of the rapidly increasing demand for mechanical power by the industries and homes of the United States reveals in part the secret of its leadership as an industrial and commercial nation. Greater and more economical production at the minimum expenditure of human energy is one reason for its supremacy. Mechanical power as utilized in the automobile and tractor, in the locomotive and steamboat, and, as derived from the electric motor in the factory and home, lies at the root of the growth of the country and of the increase in the physical and spiritual well-being of its people.

The tremendous advances in the art of generating power to meet demand are indicated in the award by an eastern public utility of a contract for a steam turbine to generate 160,000 kilowatts or more than 210,000 horsepower. This gigantic machine is 60 per cent larger than the largest turbine previously constructed. Compared with the turbines of ten years ago, it is considered a miracle of engineering invention. An interesting contrast is recalled. At the opening of the Centennial Exposition in Philadelphia fifty years ago, President Grant and the Emperor of Brazil started a giant Corliss engine, generating 1,400 horsepower, weighing 700 tons and requiring sixty-five freight cars to deliver in Philadelphia.

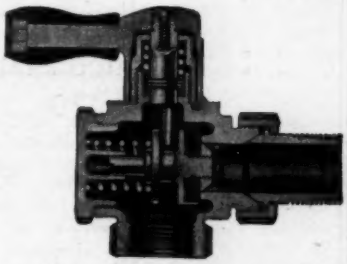
To reflect these enormous strides in the mechanical arts and to make them available to the engineering and industrial public is the important function of the National Exposition of Power and Mechanical Engineering which will be held in the Grand Central Palace, December 6 to 11, 1926.

The exposition will fill four floors of the palace with showings of all types of power and heat generating, distributing and using equipment. It will include refrigerating, heating and ventilating machinery and machine tools and power transmission devices, in addition to the usual important exhibits of power plant apparatus.

New Modulating Radiator Valve

A modulating radiator valve of a new and unique design for one or two pipe low pressure steam, vapor and vacuum systems is announced by Jenkins Bros., Valve Manufacturers, 80 White Street, New York.

It is a patented valve with the disc and seat in a vertical plane, which is a new feature with several particular advantages. This construction prevents foreign matter such as scale and core sand which falls from sections of cast iron radiators from lodging on the seat and hindering tight closing of the valve.



Steam enters at top of the seat and condensation drains out of the bottom of the seat, which is an important advantage when the valve is used on a one-pipe low pressure system, because the flow of steam into the radiator is not retarded by the returning condensation. This design also eliminates gurgling, water-hammer, and shock.

The valve is furnished in ¾-inch size and is made of high grade bronze, rough body, nickel plated all over, with polished and nickel plated indicator cap.

Elliott Co. Acquires Ridgway Dynamo & Engine Co.

Elliott Company, of Pittsburgh, now operating plants at Jeanette, Pa., Springfield, Ohio, and Wellsville, N. Y., and with branch offices in principal business centers, has purchased the extensive plant of The Ridgway Dynamo and Engine Company at Ridgway, Pa., together with its good will and other assets.

The Ridgway Dynamo and Engine Company has been a successful manufacturer of steam and electric machinery for over thirty years, and enjoys an excellent reputation. Under Elliott Company management the Ridgway Plant will be improved, production increased and sales work aggressively pushed.

This acquisition is a further step in the expansion program of Elliott Company, which in recent years has been forging ahead at a rapid rate in extending and developing its power machinery business. Less than two years ago, the Kerr Turbine, formerly manufactured by The Kerr Turbine Company, of Wellsville, N. Y., was added to the list of Elliott products.

With the addition of the Ridgway line, the Elliott Company organization is manufacturing a very complete group of power equipment, including steam turbines and generators, several different types of engines, all types of condensers, feed water heaters, air ejectors, deaerators, motors, and electrical machinery, as well as smaller items such as strainers, filters, valves, and boiler tube cleaners.

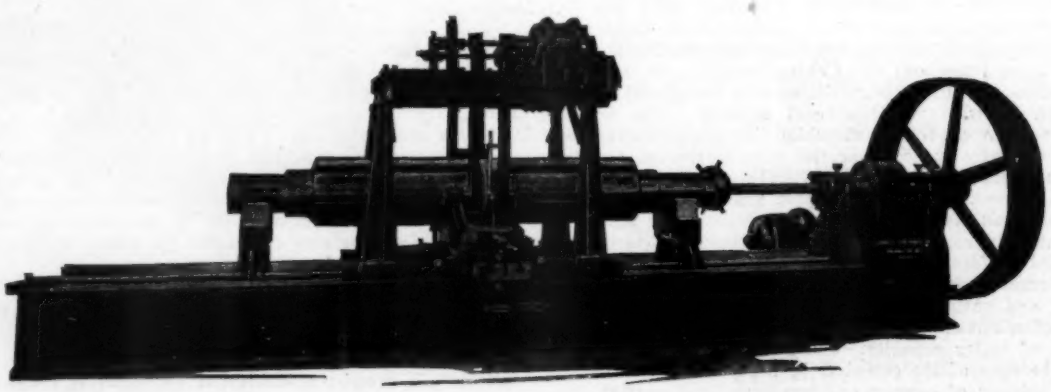
Link-Belt Co. Holds Drive Chain Conference

For the sixteenth time in 20 years, the first conference taking place in 1906, just six years after they introduced silent chain to the American public as a power transmitter, the Link-Belt Company of Chicago, Indianapolis, and Philadelphia

LOBDELL

ROLL GRINDERS

are reducing the cost and time required to keep their rolls in perfect condition in over 60 paper mills in the United States, Canada and abroad.



THE automatic crowning device and the provision for leveling the bed are features found only in LOBDELL Roll Grinders. They reduce the time of grinding, increase the accuracy, and prolong the life of the machine. They are fully illustrated and described on page 371 of the Pulp & Paper Mill Catalog and in our booklet on the Grinding, Care and Upkeep of Paper Mill Rolls. Write for your copy.

Lobdell Car Wheel Company

Wilmington, Delaware

Established 1836

held their Drive Chain Conference—this year at Indianapolis, July 7th, 8th and 9th.

This conference, held at the Dodge Works, "The Home of Silent Chain," and presided over by Mr. James S. Watson, general manager of the Dodge plant, and of the Drive Chain Division, was unique in its modernness in many respects.

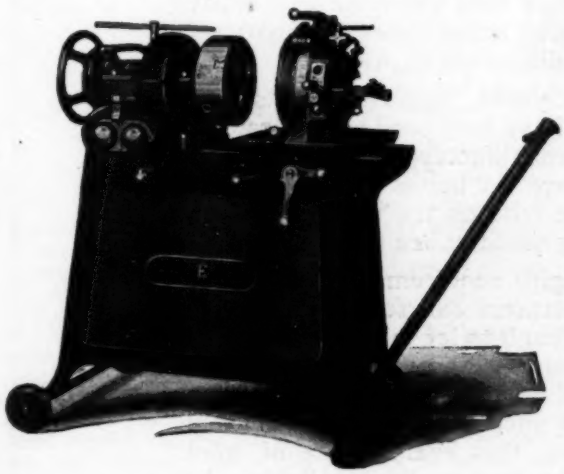
The keynote of the open discussions of the three days' meeting was to develop a true round table discussion on better methods of serving their respective fields, and to promote an increased outlook through a dissemination of the idea that: "Business is obtainable if the product is good, if its presentation is correct, and if the buyer can be told where to look for it, fortified in his knowledge that the most thorough service is awaiting his demands."

Fifty sales representatives from all sections of the country were led in the discussion by Mr. Watson on the first day of the meeting and the conference closed with an intensive study of the products and the methods of production at the Dodge plant.

Portable Pipe Threader

The Hall-Will, Inc., Erie, Pa., manufacturers of a complete line of precision, production machines has placed on the market their first tool, the Red-E-Hall Portable Pipe Machine, capacity ¼" to 2" pipe, and ½" to 1½" bolts. It can also be used as a power unit, using universal shaft to drive hand stocks up to 12 inches.

Although the tool is designed as portable machine, it can



be changed over in three minutes to a stationary machine, and will produce precision threads on a real production basis. It is malleable iron and steel construction throughout, light in weight—450 lbs., yet giving strength and rigidity—eliminating the breaking of small parts.

Having a built-in-truck, the tool can be elevated instantly for portable operation. The rear feet of the machine are mounted on small wheels, while the front feet are provided with double swivel casters, which elevate the front of the machine when the handle is moved forward. If the machine is not going to be moved frequently, truck, wheels and casters can be dismantled in five minutes and laid away until required.

Features of the machine include: three speeds, with all gears and shafts run in oil; silent chain drive direct from motor to machine; friction clutch insuring easy starting and stopping; Timken roller bearings on all drive shafts, and four extra sets of dies to cover the complete range of the machine.

The announcement is made of the appointment of Mr. H. G. Welsford to the position of general manager of the Dominion Engineering Works, Ltd., to fill the vacancy caused by the death of Mr. John Overn, Jr. Mr. Welsford has been assistant general manager of the company for some time and has been closely identified with its development and expansion.

Prominent Canadian Engineer to Reside in England

To **The Canadian Engineer**, a weekly paper for civil engineers and contractors, published in Toronto, we are indebted for the following story about a man who is well known in the paper industry of Canada and United States:

Alfred J. T. Taylor, of Toronto, president of the Combustion Engineering Corporation, Ltd., has been offered, and has accepted, the position of chief executive of the Underfeed Stoker Co., Ltd., London, a firm of 35 years' repute as the largest in the British Empire in their particular line.

Reluctant to leave Canada, his native country, Mr. Taylor at first refused the offer, but during the past year several instances have arisen that convinced him that considerable national service could be rendered by a Canadian engineer resident in London. The factor that most influenced Mr. Taylor's decision was the opportunity of acting as a technical link between the engineering firms of Great Britain and the engineers of Canada.

In 1921 Mr. Taylor was persuaded by interests identified with the International Combustion Engineering Corporation to form the Combustion Engineering Corporation, Ltd., of Toronto. Since that date he has been president and managing-director of that firm, with offices in Toronto, Montreal, Winnipeg and Vancouver. He is also president of the Ruths Accumulator Co., Inc., of New York. Mr. Taylor will retain his connection with both of these firms, and will spend at least a month or two each year on this side of the Atlantic.

Two other Canadians will be associated with Mr. Taylor in his new position. John Anderson, vice-president and secretary-treasurer of Combustion Engineering Corporation, Toronto, will be Mr. Taylor's chief assistant with the Underfeed Stoker Co. Mr. Anderson has been closely associated with Mr. Taylor in all of the latter's undertakings for the past eleven years. W. E. Maclean, mechanical engineer of Combustion Engineering Corporation, Toronto, will be on the engineering staff of the Underfeed Stoker Co. Mr. Maclean was formerly construction engineer of the State Hydro-Electric Department, Tasmania.

Mr. Taylor's headquarters will be at the head office of the Underfeed Stoker Co., Africa House, London. He succeeds an eminent engineer, Wilfred Rothery Wood, who was the founder of the Underfeed Stoker Co., and who has been its managing director for the past 30 years. Mr. Wood has retired from the active management of the Underfeed Stoker Co., in order to develop the new "Combustion" steam generator, of which he is the inventor, and which has been heralded as a great economic advance in steam engineering, and to head the Research Department of the International Combustion Engineering Corporation.

George F. Steele Visits South America

George F. Steele, director of sales of Powell River Company, Ltd., Powell River, B. C., returned to his office in the Aeolian Building, 33 West 42nd Street, New York, Tuesday, July 27, after a trip to South America from the east to the west coast, across the Pampas and over the Andes Mountains, a journey of 14,000 miles which was covered in eighty days.

Mr. Steele's object in taking the trip was to ascertain by personal interviews with the publishers of newspapers what the prospects are for the future business, and in a talk with a representative of THE PAPER INDUSTRY, he expressed himself as being greatly pleased with the outlook for an enlargement of trade between the United States and the Latin-American countries visited by him. He is a believer in direct dealings with South-American business men by means of personal calls by the executives of United States manufacturing concerns. In all the newspaper establishments visited by him, American printing presses were generally used and the paper was American newsprint.

Ernest Wooler, chief engineer of the Timken Roller Bearing Company, is visiting England, the land of his birth. During his stay there he plans to investigate the development of anti-friction bearings in all industries, including automotive, industrial and transportation. The British Timken plant at Common Lane, Ward End, Birmingham, will be visited.

There Is NO substitute *for* QUALITY!

NO MATTER what the product may be—you can usually find someone who will offer you a similar product, or a substitute, at a slightly lower price.

But to the manufacturer who wants a product that will do the work better and more economically, price is not the primary consideration. Invariably, the service that the quality product will render, many times overshadows a small difference in price.

For 35 years, Appleton Felts and Jackets have been used by the leading paper manufacturers of America. There are no better running, more accurate felts on the market. Their wearing qualities are unsurpassed.

The rigid requirements of paper manufacturers call for a felt that is open enough to let the water through and close enough not to show the imprint of the felt on the paper. To produce such a felt, it is absolutely necessary that every ounce of wool be of the best quality available. In 35 years we have never permitted the use of anything but pure virgin wool.

APPLETON WOOLEN MILLS
APPLETON WISCONSIN

110-8

Appleton

Felts and Jackets

Book on Hydraulic Engineering

Hydraulic Engineering is the title of a copyright book edited by the Houghton Research Staff and published by E. F. Houghton & Co., Philadelphia, at $2.50. This company has gained a most enviable reputation as publishers of technical monographs and news journals or house organs of special interest.

As set forth in the preface or foreword to the book by Charles E. Carpenter, president of the company, "the object of publishing **Hydraulic Engineering** is solely for the purpose of contributing to the engineering profession that knowledge of hydraulic engineering which the Houghton Research Staff, because of its exceptional opportunities, has been able to compile in its many years of research work." In another part of the preface, Mr. Carpenter wishes it to be "distinctly understood that the object of publishing the book is not advertising." Lest any doubt might be entertained on this point, Mr. Carpenter states further along that "the publishers have reached that stage of business success where money-making is no longer their principal object of being in business and they feel that whensoever information such as is herein contained is gathered together, it should serve a wider field of usefulness than it can possibly serve if held for the exclusive use of the Houghton Organization."

Some idea of the character of the book may be obtained from the chapter headings which include "Hydraulic Packings and Their Application," "Production and Application of Hydraulic Power," "Storage of Hydraulic Power," "Complete Valve Equipment for Pre-Filler," "Intensifier and Multiple Cylinder or Selective Pressure Systems," "Types of Hydraulic Presses," "Systems of Operation and Control," and "Common Troubles Encountered in the Application and Use of Hydraulic Leathers." The book is profusely illustrated with charts, tables and designs of apparatus and should form a useful handbook of the subject for any engineer.

Paper Maker Directory of All Nations

The new edition of the "Paper Maker Directory of All Nations," published by Dean & Son, Ltd., London, England, is now ready for distribution. Numerous additions and corrections to names, addresses, mill productions, machines, output, power used, etc., have been made.

The international character of this directory—the Red Book of the British Paper Industry—and the useful buyer's guide, make it invaluable for bringing paper makers in touch with merchants, newspaper proprietors, wholesale houses, printing firms, etc.; chemical and color manufacturers, with paper and pulp makers; china clay and fiber merchants; paper, pulp and board agents; paper stock dealers; felt and paper machine wire manufacturers, and a host of allied trades not only in England but also in foreign and colonial countries.

The book is alphabetically arranged throughout, both countries and mills, and the list of mill productions under more than 400 trade headings is also classified alphabetically in three ways, under Goods, Country of Origin and Name of Firm. Copies of the directory may be obtained from Dean & Son, Ltd., Debrett House, 29 King St., Covent Garden, London, W. C. 2. The price is 21 shillings—net.

Ailanthus as a Pulpwood

In Bulletin No. 38, issued by the Pennsylvania Department of Forests and Waters, Harrisburg, Pa., the ailanthus tree and its possibilities as a pulpwood are discussed. The results given of tests made seem to indicate that ailanthus wood is well adapted to the manufacture of pulp.

According to the bulletin, "the ailanthus situation in Pennsylvania is serious. It is the only introduced tree that is competing vigorously with our native tree growth, and in this competition it appears to have a marked advantage. Unless a use is found for its wood, this tree will develop into a worthless forest weed and become a forest nuisance of the first magnitude. To check its growth is a difficult problem. It is far more practical to find a use for its wood than to attempt to control this ultra-aggressive tree. A general study of its wood characteristics suggested that it might be used in the manufacture of pulpwood. To determine the merits of this suggestion, a co-operative experiment was undertaken several years ago by the Pennsylvania Department of Forests and Waters and the Forest Products Laboratory, Madison, Wisconsin.

" . . . The results of the experiment fully confirmed the belief that it was a good pulpwood. The study showed that oven-dried wood weighs 33.5 pounds per cubic foot. The corresponding density of aspen is 23 pounds and spruce 24 pounds. A study of the wood fibre of ailanthus showed a length of 1.2 millimeters, while that of aspen is 1 millimeter, which means that ailanthus pulp should be stronger than aspen, other things being equal.

" . . . Ailanthus pulpwood will probably be used to the greatest advantage in the soda process, by which bleached pulps can be obtained suitable for book, lithograph, and other papers in which softness and opacity are requisites. More detailed technical information on the pulping value of ailanthus can be had from the Forest Products Laboratory, Madison, Wisconsin."

Catalogs, Booklets, Etc.

American Blower Co., Detroit, Mich.—A very informative bulletin on this company's "H. S. Fans" has been recently received. Blower construction and operation are thoroughly discussed with the aid of a number of illustrations. Engineers will be interested in the capacity tables for different sizes of installations that are given, and also in the charts and diagrams displayed.

Armstrong Machine Works, Three Rivers, Mich.—The Armstrong Steam Trap is very clearly and completely presented in a new booklet. The Inverted Submerged Bucket principle, exclusive with these traps, is brought out in a way that leaves nothing to be imagined. Numerous charts, illustrations and installations are given.

Atlas Valve Co., Newark, N. J.—In a recently issued bulletin, this company announces the addition of the new and novel "Campbell Feed Water Regulator" to its line. This device, which regulates boiler feed without a float, generator, link or thermostat, is completely described and illustrated. Numerous examples of successful installations are given.

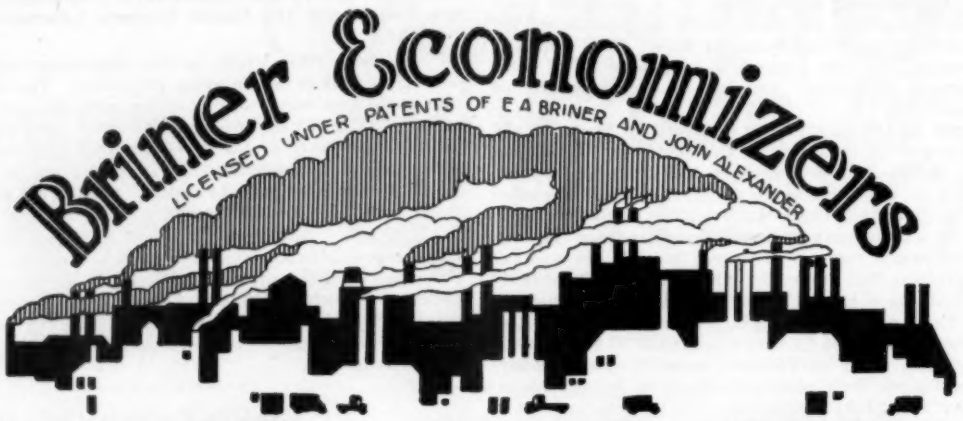
Combustion Engineering Corp., New York City.—The C-E Unit System for burning pulverized coal forms the subject of a catalog recently issued. The construction and operation of the unit are gone into very thoroughly and there are numerous illustrations to help in the presentation.

De Laval Steam Turbine Co., Trenton, N. J.—Three new booklets have been received. One describes worm reduction gears with the pressure oiling system, another, De Laval helical gears, and the third is on the installation of eight De Laval turbine driven centrifugal pumps in the Fairmount Pumping Station at Cleveland, Ohio. All three booklets, and especially the latter, are very interestingly presented, clearly illustrated, and should prove of great interest to the trade.

General Electric Co., Schenectady, N. Y.—The monthly issue of individual bulletins has been received. These bulletins are descriptive of various types of motors, controllers, panels, switchboards, oil circuit breakers and general electrical equipment. Copies are available for distribution.

Pennsylvania Pump & Compressor Co., Easton, Pa., with branches at 30 Church Street, New York, and 325 Penfield Building, Philadelphia, Bulletins Nos. 206 and 207, describe the multi-stage centrifugal pumps of the single suction opposed impeller type, and centrifugal pumps of double suction, single stage types. Numerous applications for the various pumps described in these bulletins will be found in pulp and paper mills. Copies of the bulletins can be obtained on request.

Roeper Crane & Hoist Works, Inc., Reading, Pa.—Issue Form No. 118, an eight-page pamphlet descriptive of Roeper Type "R" Electric Hoists, which are represented to be a good-paying investment, as they lift ten to twenty times faster than hand-power methods and consequently mean increased production and economy. Users of hoisting machinery will be interested in this pamphlet, which illustrates methods of attachment, equipment and operation.



Saving More than Four Million Pounds of Steam Daily!

This tremendous saving is being secured by utilizing waste vapor to heat the machine room air supply—without steam. Besides saving steam the Briner Economizer takes the winter load off your boiler.

The temperature of the air supply for the machine room of a prominent mill was raised from BELOW ZERO to 90 ABOVE—WITHOUT STEAM. Every mill superintendent knows about what it would cost for steam to accomplish this result. And every superintendent knows the load that would be put on his boilers to provide the necessary amount of steam.

Save steam this winter. Take the load off your boilers in coldest weather when the demand on them is greatest.

Investigate Now—How You Can Easily Cut Costs This Winter!

See page 388 in the 1928 Paper and Pulp Mill Catalogue

J. O. ROSS ENGINEERING CORPORATION

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ROSS ENGINEERING OF CANADA, Limited
NEW BIRKS BLDG., MONTREAL, QUEBEC

ROSS SYSTEMS

HEATING - VENTILATING - DRYING

Some Reasons Why Foreign Pulp Is Cheaper Than American[1]

By IVAR LUNDBACK
Chemist, Lee Paper Company

WHEN considering the economical balance between foreign and domestic pulp we have to take into regard six main points, dividing advantages and disadvantages to both sides. These points are the coin-exchange, freights, taxes, wages, the supply and prices of the raw materials and the development of engineering, science and organization in different countries.

Coin-Exchange—The first point is the coin-exchange. When the present system of coin was developed each country got its certain unit of coin stabilized to a certain value, about the same for most European countries. Years ago the franc, the shilling, the mark, the lire and the three Scandinavian crowns had about the same value. Slow communications and long distance helped to neutralize overthrowing consequences of wars. But some countries were more progressive and some had more natural resources, and so their units of coin became more valuable. America has its dollar, perhaps the most stabilized and safe coin of the world. In one way the coin exchange is favorable to American manufacturers; that is, that the foreign seller must figure in the most safe coin, and so he has to figure with a safety margin.

Freights—The freights are evidently favorable to America, and this cannot be changed by Europe.

Taxes—It is no secret that the taxes are much heavier in Europe than in the United States. Especially the big companies are pretty badly stricken by taxes, in some cases causing real crashes. In some countries already with a profit of $40,000, the taxes amount to 50 per cent, and this means a lot of figuring in European cost departments.

Wages—However, it is a matter of fact, that no country in the whole world pays its laborers so high salaries as the United States. A machine tender boss, a first-class workman, in Scandinavia has about 25c an hour, and he has taxes to pay. How is it possible that they are able to get along? At first, the European workman, compared with the American, is not a fellow to envy. He cannot very well afford such things as a car, a radio, etc. His life is all through more simple. But there is another reason behind this matter. When the standard of one unit of coin in one country is higher than the standard of one unit of coin in another country, the whole standard of cost in the former country will be higher. A very common idea is that for one mark in Germany, one crown in Sweden, etc., you can buy just as much for one dollar in the United States. Another idea is that you can buy just as much for 24, viz., 27c, that is the bank-exchange. Both ideas are wrong. The truth is that the balance is about the average. If you in a foreign country buy one unit of coin for two units of your native coin, you will be able to buy articles in any store to an extent of value equal to one and one-half units of your native coin.

Now we understand why the foreign manufacturer can employ more workmen for the same amount of money, even if their standard of living would be higher than it is today. The standard of cost, which is not the same as the standard of living, would still be much below the standard in America, because the dollar is more valuable.

Raw Materials—The supply and prices of raw materials used to be more favorable to the American manufacturers than today. The Europeans have succeeded in overcoming this to a great extent. In Scandinavia, for instance, most coal is imported. They have no coal mines of importance. In recent years a real wave has gone through the industry—electrifying. They used to pay considerable money for fuel, but they do not do it now. Where former steam-eating engines and turbines were running, now electric motors pull the machines. Nearly all mills have their own waterpower, electrified and properly distributed. Superfluous current supplies heat, light and power to towns, communities and cities. In some cases the excess is taken to electric boilers, and the main part of fuel boilers is heated with bark.

The most important raw material, however, is wood. Here three facts are to be noticed. At first, Scandinavian laws forbid an owner of a forest to cut down his trees as he wants. They figure regrowing in 30 years. Of course, this makes the timber cutting troublesome, but the trouble will be paid for when Canadian, American, Russian and Szechoslovakian forests are no longer so vast as they used to be. The Scandinavian countries will never lose this natural prosperity. Second, the climate is a very important factor. Sometimes the snow comes without previous cold and freezing to the ground, and temporary roads will not be very well adapted for tractor traffic. Other years they get very good roads, which can be used by tractors. Third, the organization of the forest workmen is one of the strongest of the world. Compared with the mill laborers in Scandinavia they are considerably better paid, but the fact that they work under extremely hard conditions and beyond civilization makes the conditions a very fertile ground for bolshevism. The workmen use every opportunity to strike and they really possess such power that they each year force the companies to pay wages making highest possible price for wood.

Development of Science—The last point is the development of science, engineering and organization. People across the ocean used to say: "There is no stagnation, there is only forward or back." I would, according to this, divide up the mills in progressive and regressive mills. A company, not each year spending considerable money on rebuilding and improvement, is regressive, even if everything works satisfactorily. The boss, who says: "We have been working with this, just as it is for 20 years, and it still works just as good," will one day see himself put into the question of rebuilding the whole mill—or suffer in competition, perhaps close down.

The Scandinavians show a great understanding on this point. The general superintendent in a Swedish mill, where I was chemist, used to say that the mill was the second one he had been running on the very same place. And he was right, because of the mill, built 1900, only one building was unchanged. That is progress. In a couple of mills they have built electrically operated wood rooms, thus cutting down the employees working there from 15-20 to 3-5 per shift. And if mechanizing the manual work means a lot in Europe, how much more would it mean here?

Another great point in Europe is the arranging and developing of laboratories and technical control. This is very much enforced. Several American laboratories seem to be arranged only to test the raw materials and the product on moisture. In Europe they mean with technical control to run the mill from the laboratory, and this is done—it would not be done, if it did not pay.

The practical paper and pulp maker says: "We have been running this mill for 20 years without a laboratory and made money all the time; we need no laboratory." In other cases he said: "The mill making most money is, so and so, and they have no laboratory." Is this a reason? How much more would they have made, if they had one? The effect of a laboratory is hard to put in figures, it works in every corner of the mill, saves money on raw materials, but takes care of waste and improves the product. And improved product, uniform quality, means fewer "kicks" and better orders. Then it is the question whether to quote this on the laboratory or on the market conditions.

As a summary I would say that the points working to favor of Europeans are the wages and their greater development. The wages cannot very well be changed, but in development great steps still could be taken before Americans are up to the European standard.

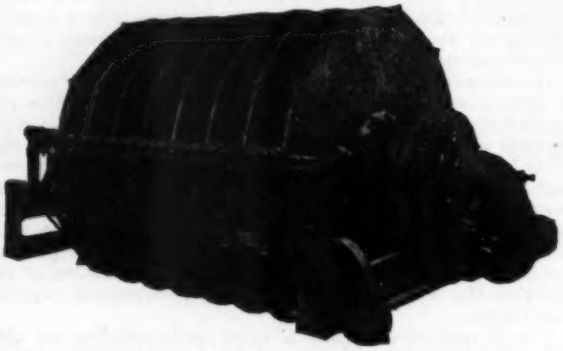
[1] Presented at the joint meeting of the Kalamazoo Valley Cost and Technical Associations, held at the Dixie Inn, June 20, 1926.

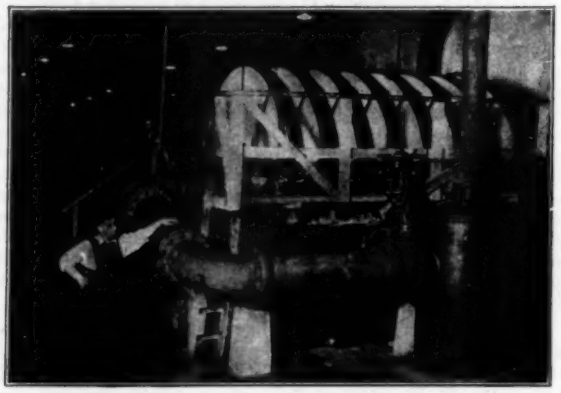
It is now proposed to use paper pulp as the basic ingredient of a dentifrice. In a patent issued July 6, 1926, to Ferdinand W. Nitardy, assignor to E. R. Squibb & Sons, New York, one of the claims is for a dentifrice having as its base purified paper pulp in which the original cell structure of the source thereof is preserved, in a finely divided condition.

The seventy-second general meeting of the American Chemical Society will be held in Philadelphia, September 6 to 11, inclusive.

Let Us Show You in Your Mill How Dollars Can Be Taken Out of Your White Water

A small portable unit of the American Continuous Filter pictured below will be demonstrated in your mill





To prove how it will save you thousands of dollars worth of wood pulp in a regular sized installation like this

WRITE any one of our offices and ask them to show you how the American Continuous Filter will save you the pulp that is washed away in white water—as well as thicken groundwood or chemical pulp.

The United Filters Corporation has built small 300-pound portable demonstration units of its pulp type American Continuous Filter.

A representative will set it up in your mill, pass your own white water through it and show you a sample of the way the regular sized American will separate good pulp from waste water. Even on the small unit you will see for yourself how clean and clear the water comes out of the machine—how a matte of pulp forms on the disc which serves as the real filter medium proving that practically *all* the paper pulp is removed and held for you to re-use.

The American Continuous Filter is made for different applications—depending upon the general arrangement and flow sheet of your mill.

Let a United Filters engineer first demonstrate how the American Filter saves, then recommend the right type to make the savings. Write our nearest office.

American Continuous Filters
Sweetland and Kelly Pressure Filters

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AMERICAN
SWEETLAND
KELLY
FILTERS

United Filter Presses
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Main Office and Laboratory, Hazleton, Pennsylvania

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Export Office—25 Broadway, New York, N. Y.

Code Address—Unifilter, New York

Meeting of Paperboard Industries Association

Members of Paperboard Industries Association met at the Roosevelt Hotel, New York City, in group sessions on Wednesday, July 21, morning and afternoon, and on Thursday morning, July 22, followed by joint session with the members of the three groups in attendance on the afternoon of Thursday, July 22. Preceding the joint session on Thursday afternoon, members gathered in the Ball Room of the Roosevelt at 1:00 P. M. for luncheon.

Despite the fact that the meeting was held during the vacation period, and the further fact that at times the thermometer hovered around 97 degrees, there was an unusually fine attendance and every session was held according to schedule and productive of constructive work.

President Fletcher M. Durbin presided at the joint session, and in the unavoidable absence of Vice-President A. C. Osborn, of the Folding Box Group, he also kindly consented to take the chair at the meeting of that group.

Folding Box Group Meeting

The Folding Box Group Meeting was held Wednesday morning, July 21. A full and frank discussion was held with regard to the subject of "Specified Inks." There is a strong sentiment on the part of the folding box manufacturer against this practice, whereby the folding box buyer is approached by promoters of certain inks with a view to having the purchaser specify the ink to be used for printing the boxes.

There was also a discussion on the subject of "Warehousing Finished Goods." Apparently the warehousing evil has been growing. One member reported that specifications recently received call for six, nine and twelve month deliveries. This tendency, it was reported, indicates that the buyer believes the present a good time to make purchases with a view to protecting himself on future requirements.

Mr. A. W. Luhrs, in charge of the sales promotion field work, appeared before the meeting and outlined accomplishments to date in extending the use of folding cartons.

Mr. M. C. Walsh, Fellow, Mellon Institute of Industrial Research, gave a report covering his studies on research subjects of particular interest to the Folding Box Group.

Paperboard Group Meeting

The Paperboard Group Meeting was held Wednesday afternoon, July 21, with Mr. W. J. Alford, Jr., a member of the Executive Committee, presiding.

General Manager Browder reported to the meeting that while for many years the Freight Classification requirements have been silent in the matter of thickness of the material used in the corrugated sheet, a standard of .009" in thickness had generally been observed. He stated that the Classification Committee now proposes to write into the rule a requirement that the thickness of corrugating material shall be not less than .009". He expressed the view that the Committee's proposal will be adopted and that, probably in about two months, this requirement of a .009" minimum thickness will become effective.

Container Group Meeting

The Container Group Meeting was held Thursday morning, July 22, with Vice-president J. P. Brunt presiding.

General Manager Browder submitted a report of subjects of interest to the group.

Chairman E. R. Hankins, of the Statistical Committee, gave an interesting progress report on the subject of cost estimating. As a result of action taken at the meeting, a Statistical Committee has been requested to undertake the compilation of a cost system for the solid fibre container industry.

A report was submitted on the subject of Inspection Service, which covered the inspector's activities during the past two months.

Appropriate action was taken by the meeting with regard to having supplies purchased by the container industry shipped in corrugated or solid fibre boxes.

The Container Group went on record as being opposed to the practice whereby the ink manufacturer causes the buyer of containers to specify the ink to be used.

There was an interesting discussion of business conditions, which was participated in by practically all present.

An excellent program was carried out at the joint meeting, consisting of reports and subjects for discussion of interest to the three groups.

OHIO NEWS

The Miami Paper Company will hold its annual outing at Triangle park, Dayton, August 14. The committee in charge has arranged a program of interest to employees and their families, including athletic contests, baseball games and dancing.

Supply of Straw More Than Expected

Notwithstanding various early reports relative to the straw crop in the Miami Valley and Ohio generally, it appears that it will amount to considerable. Early indications were there would be an insufficient supply and as far as the actual needs of strawboard companies is concerned, this probably is true.

However, later reports show many large fields in this section have produced far more than was expected earlier owing to the unfavorable weather conditions. The supply in the Middle West doubtless will be used to the limit by manufacturers. In some sections the crop harvested during the past two weeks was the smallest on record for 20 years. The crop in the state is estimated at 40,000,000 bushels and paper manufacturers will have to estimate the amount of straw they will obtain from these figures. At least, the crop is not an entire failure.

Robert J. Connelly

Robert J. Connelly, president of the Ohio Paper Company of Miamisburg, died recently at his home in Dayton following a protracted illness in his 64th year.

Mr. Connelly was born in Dayton and received his education in Dayton institutions. Many years ago he became associated with the late William P. Callahan, capitalist and banker, who invested in several paper mills, including the old Levis mill in Dayton, long since discontinued, and the modern Ohio paper plant at Miamisburg. At Mr. Callahan's death, Mr. Connelly was elected president of the Miamisburg company and remained as its head until his death. His two sons, Robert A. and Edward R. Connelly, probably will have charge of his paper mill interests and other enterprises, notably the P. M. Harman Company of which he was president for many years.

Mr. Connelly also succeeded the late Mr. Callahan as the head of the City National bank which later was reorganized and broadened becoming one of the leading institutions in the Miami Valley.

Mrs. Ida Connelly, named as the beneficiary in his will, with her sons, will administer the estate which is valued at $200,000, according to probation records.

A number of paper mill associates attended the funeral which was held at Corpus Christi church, Dayton. Banking and mill activities were suspended during the funeral.

Crystal Tissue Plans Addition

A new addition to the Crystal Tissue Paper Co. is now in prospect for early erection. Plans for the new building are being held in abeyance until the return of Z. W. Ranck, president of the company, from an Alaskan trip, early in August.

New engines and generators now are being installed in the power plant of the mills to increase the efficiency of production.

Superior Paper Co. Property Sold

Sale of the property of the Superior Paper Co., of Franklin, by the receivers, H. W. Ivins, Lebanon, and Fred Zartsman, Franklin, acting upon the order of the court following the re-dissolution of the company, brought the amount of $124,110.10.

The court ordered that after the disbursements were made, leaving the sum of $11,102.93, a final dividend of 5.6 be paid the creditors. The disbursements totaled $113,107.17, not including taxes. The property in Franklin, on which the plant of the firm stood, was sold to a Cincinnati concern.

GERRARD
The Tie That Binds

Equip your mill with the Gerrard Method

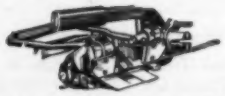
Whatever your needs may be there is a Gerrard method of packing that will reduce loss and damage, effect savings in loading time, labor, handling, and promote better customer relations.

Gerrard Uni-Lastic Stowage protects your shipments of roll paper from the millions of shocks of train vibration and from the shocks of starting and stopping trains and low speed switching.

The Gerrard method of tying flat stock on skids effects an immediate saving of 75% over old methods. Skids are easily handled, quickly loaded and unloaded, and thoroughly liked by printers.

Where flat stock must be packed in cases, the Gerrard method offers a speedy, money saving means of protection against damage.

The Gerrard Model "G" Little Giant wire tying machine is used for each one of the above purposes. Hence its utility is unlimited. Any mill can keep this machine busy throughout the day at a surprisingly low cost. We know of no other equipment for the paper mill that is so useful and saving, and that costs so little.



The Gerrard Model "G" Little Giant wire tying machine for heavy packaging and Uni-Lastic Stowage. It's the busiest machine in every paper mill in which it is installed—an important link in the Gerrard method of packing and shipping paper.

Our representatives are at your service for making tests and showing you **actual proof** of the enormous savings resulting daily from the use of Gerrard method. Where shall we send one? No obligation.

GERRARD WIRE TYING MACHINES CO.

1939 South 52nd Avenue :: :: CHICAGO, ILL.

NEW YORK CITY NEWS

Atterbury Bros. Absorb Nilsen, Lyon

Atterbury Brothers, Inc., importers of and dealers in papermakers' supplies, of New York, have absorbed the firm of Nilsen, Lyon & Co., Inc., wood pulp importers and agents of 110 East Forty-second street, New York, and have removed their offices from 145 Nassau street to the East Forty-second street address. Stanley C. Willey, formerly of Nilsen, Lyon & Co., Inc., has joined Atterbury Brothers, Inc., and has been elected vice president of the latter corporation. Mr. Willey will have charge of the pulp department of the company, which will be represented in Gothenburg, Sweden, by John Lyon & Co., and in Oslo, Norway, by Anth. B. Nilsen & Co.

Atterbury Brothers, Inc., are among the oldest concerns in the paper mill supplies trade. Established on January 1, 1876, the company celebrated its golden anniversary the first of this year. It was located at 140 Nassau street for 20 years from 1887 onwards, and since 1907 was at 145 Nassau street. The removal on July 10 to 110 East Forty-second street was decided upon so as to be in the wood pulp importers' district in New York. Under the new arrangement the company expects to materially expand its business in wood pulp.

J. B. Seaman Resigns from Seaman Co.

Joseph B. Seaman, one of the most widely known men in the paper industry, has resigned as first vice president of the Seaman Paper Company, of Chicago and New York. Mr. Seaman has been with the company for 27 years, and has been in charge of the firm's eastern headquarters ever since they were opened in New York in 1913. His stockholding interests in the concern remain unchanged, and he continues as a director of the corporation.

For many years, in association with his brothers and the Seaman Paper Company, Mr. Seaman has been vitally interested in the development of various organizations which would promote the consumption and sale of paper. He is vice president of the Mills Securities Corporation, which is the holding company for many of these interests. He has been deeply interested in the development of the Aquaton Corporation as its vice president, the perfection of the Angel Paper Milk Bottle which is marketed through the Health Container Sales Corporation, of which he is president, and the distribution of the paper products produced by the Seaman Fibraknit process as employed by the Seaman Container Manufacturing Corporation, of which he is vice president.

Receiver for Board Mill

P. LeRoy Harwood, of the Mariners' Savings Bank, New London, Conn., was appointed temporary receiver for the Fort Griswold Paper Company, manufacturer of paper box boards of Montville, Conn., on July 14, on the application of two stockholders, and a hearing will be held August 5 before Judge C. L. Avery in Norwich, Conn., on the appointment of a permanent receiver.

The capital stock of the company is $100,000. Mr. Harwood has advised that the unsecured liabilities of the company, according to the books, amount to approximately $50,000, and the current assets to approximately $30,000. The mill makes board and specialties, having a capacity of 40,000 pounds every 24 hours.

Forest Company to Move

The Forest Paper Company, Inc., of which Michael Pomerance is president, has leased the entire eight-story building at 334-338 Hudson street, New York, containing a total of 60,000 square feet of floor room, and as quickly as extensive alterations can be made will move into the new quarters from its present location at 76 Duane street. The lease runs for a long term of years, and the aggregate rental amounts to $325,000.

The company is one of the young and progressive paper jobbing concerns in the metropolitan area. Founded eight years ago by Mr. Pomerance, formerly with the Manhattan Card and Paper Company, it has expanded and prospered rapidly, and the newly-acquired quarters, which it is expected will be occupied about October 15, will provide the necessary room and facilities for further growth.

Fred Enders, in charge of the wood pulp department of Bulkley, Dunton & Co., of 75 Duane street, New York, left for Europe on a business trip early in July, and will be abroad until about the end of August investigating pulp market conditions in Scandinavia and calling on his firm's connections on the other side of the Atlantic.

The Ragone Paper Stock Company has been formed by Andrew Ragone to deal in all grades of foreign and domestic papermaking rags and waste paper, with offices at 25 Broadway, New York. Mr. Ragone is widely known to paper manufacturers, having been affiliated with the trade for many years. Until recently he was manager of the paper stock department of Atterbury & McKelvey, of New York.

The Albemarle Paper Manufacturing Company, of 280 Broadway, New York, S. C. Knode vice-president, has been elected to membership in the Merchants' Association of New York.

Buck, Kiaer & Co., Inc., wood pulp importers and agents of 9 East Forty-sixth street, New York, announce they have been appointed exclusive sales agents in the United States for the Trafikaktiebolaget Grangesberg-Oxelosund, of Stockholm, Sweden.

H. Hollesen, Inc., wood pulp importers and agents of 17 Battery Place, New York, has filed notice of an increase in capital from $100,000 to $300,000.

L. F. Hayward, eastern representative of the Fox River Paper Company, has removed his offices from the eighth to the eleventh floor of 261 Broadway, New York, where he has larger and handsomely fitted quarters affording a splendid view of downtown New York and the East River beyond.

The Metropolitan Bag and Paper Jobbers' Association, of New York, will stage its annual outing on August 12 at Karatsonyi's Hotel in Glenwood, Long Island. George W. Batz, chairman of the entertainment committee, promises an interesting and entertaining program for the day in the open. Assisting Mr. Betz on the arrangements committee are Alfred E. MacAdam, Jr., Nelson Berger, Samuel Fishman and Clarence Stein.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 21159—Newspapers, overissued, large. Amsterdam, Netherlands. Purchase desired.

No. 21335—Boxes, cardboard. Buenos Aires, Argentina. Purchase desired.

No. 21322—Cardboard box manufacturing and paper cup making machinery. Leipzig, Germany. Purchase desired.

No. 21263—Cartons for butter, 10,000 to 20,000. Shanghai, China. Purchase desired.

No. 21261—Crepe paper manufacturing machinery. Tammerfors, Finland. Purchase desired.

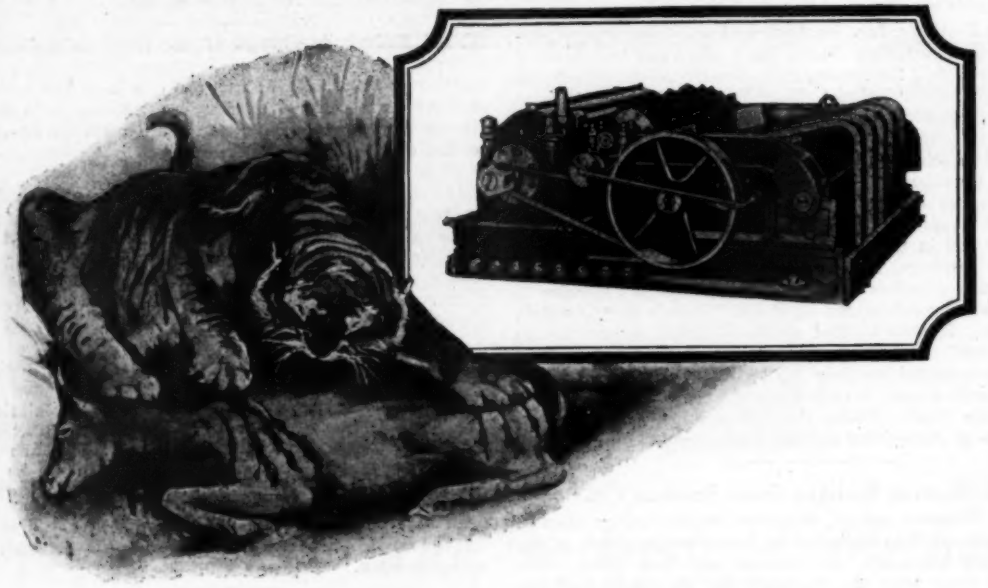
No. 21333—Paper and stationery. Delhi, India. Purchase desired.

No. 21334—Paper and stationery. Wellington, New Zealand. Purchase and agency desired.

No. 21260—Wrapping paper, jute manila for manufacture of sticky fly paper. Santiago, Cuba. Purchase desired.

No. 21312—Stationery. Victoria, Brazil. Agency desired.

No. 21351—Caustic soda. Victoria, Brazil. Purchase and agency desired.



TEARING ACTION
~Not Cutting

The primary reduction of pulp laps or sheets for beater furnish can be accomplished either by tearing or by cutting. While we admit that the latter is the only practical method for breaking up extremely hard frozen laps containing over 50% water,—the tearing method has many decided advantages when the pulp is dry, partly dry or partly frozen.

The Arpeko Shredder has a clawing, tearing action, which reduces the pulp to particles slightly larger than a postage stamp. These particles have rough, open fibrous edges which readily absorb the water and quickly make a smooth mixture of disintegrated fibres. Pulp that is cut has smooth, closed compressed edges which retard the penetration of water and thus delay beater production. Furthermore, cutting parchmentizes the fibres and although these portions can be broken down in the beater, they cannot be drawn out,—therefore, they are liable to escape the various screening operations and appear as "Shiners" in the finished sheet.

Also, since the blades of the Arpeko Shredder claw and tear the pulp, instead of cutting it, they will shred 400 to 800 tons of dry pulp, without reconditioning, which is a much greater tonnage than can be obtained from knife blades.

Complete information about this machine together with installation diagrams is included in our Bulletin No. 100. Write for it today,—no obligation.

Salient Features

(1) Suitable for dry, partly dry or partly frozen, laps, sheets or rolls.
(2) 50 H. P. Motor will operate at rate of 4 dry tons of hard kraft sheets per hour.
(3) Only 5 H. P. required to start and bring up to running speed.
(4) Timken Roller Bearings insure long life and save Power, Lubricant, Time and Repairs.
(5) Revolving blades will shred 400 dry tons without changing.
(6) Blades can be removed, conditioned and replaced by one man in three hours' time.
(7) Pulp is shredded or torn, not cut, insuring easy hydration.
(8) Shredded product contains 25% water, due to shower at shredding point.

ARPEKO

Pulp Shredder ~ Chip Screen ~ Wood's Ideal Chip Breaker

RYTHER & PRINGLE CO.
Carthage, New York

Canadian Section

Canadian Iron Foundries to Handle Mount Equipment

For many years Canada Iron Foundries, Ltd., have served the pulp and paper industry, and their plants at Three-Rivers, Fort William, St. Thomas and Hamilton are very conveniently located with respect to the principal centers of the industry. A recent development in the growth of the company's business is the taking over of the Canadian rights for the manufacture of equipment designed by W. D. Mount, whose name is already well known as a consulting engineer, particularly in the chemical manufacturing industries. Several Mount recovery plants have already been installed in soda and kraft mills, and still more in plants manufacturing solid caustic soda in the United States and in England.

William C. Munro, who has been chemical engineer for the Tonawanda Paper Co., has resigned that position in order to take charge of the development of this new branch of the business of Canada Iron Foundries. In addition to looking after the manufacture and installation of Mount equipment, Mr. Munro will be able to assist the company considerably in extending the best possible service to the Canadian pulp and paper mills in their requirements for piping and metal specialties of all kinds.

Further Reduction in Rayon Prices

An announcement of interest to the pulp industry in Canada is that the leading rayon manufacturers, Courtalds and the Viscose Company, have announced a reduction of from 25 to 35 cents a pound on rayon, according to quality, which follows a cut of 75 cents a pound last February.

It is held that this will not prejudicially affect the market for the special sulphite pulp used as a raw material, but that, on the contrary, a general increase in the consumption of rayon fabrics will result, which, of course, will mean a greater demand for pulp. It is also held that the price of the latter is not likely to be affected by the downward revision in the market price of rayon, as the cost of the pulp as a raw material forms a very small part of the total cost of the finished article.

The very considerable increase in production in Canadian and United States newsprint mills, the gain in average daily production for 18 months amounting to 2,695 tons, has thus far been readily taken up, showing that the consumption of newsprint in the United States, Canada's chief market, has run far ahead of the expectations of newsprint manufacturers.

Canada is exporting more wood pulp and less pulp wood. In June, wood pulp to the value of $4,690,574 was sold outside Canada—three-fourths of it in the United States. In June, 1925, the figure was $4,063,542. During the same month the export of pulp wood had dropped about $25,000 in comparison with June, 1925, to $1,426,515. In the twelve months ended June 30, 1926, the value of the wood pulp exported increased nearly ten million dollars and the value of the pulp wood exported decreased nearly two million dollars, as compared with the preceding twelve months.

It is hardly thought that the creation of a preferential tariff to Canada by Great Britain on kraft will have an immediate effect on shipments of the Dominion product; but it is believed that eventually Canadian kraft mills will derive much benefit from the new tariff. In this connection it is interesting to note that J. W. Pike, vice-president of Wayagamack Pulp and Paper, recently stated that his company have not been able to accept of late all the British business that offered, owing to the demands from other countries. An inquiry made of an official of the Dryden Paper Co. drew forth the reply that Dryden was not an exporter to Great Britain, disposing of nearly all its putput in the Canadian West. But, of course, any withdrawals from the domestic market to supply Great Britain would automatically be of advantage to the Dryden Company.

Substantial reduction in the amount of manufactured paper annually imported into Canada is the object of a campaign started by the Canadian Pulp and Paper Association. One thousand business houses in the Province of Quebec have been sent a "Produced in Canada" booklet by the association. Each booklet contains 100 stickers with the following inscription, printed in French and in English, "A condition of this order is that it must be printed *on* paper made in Canada."

The Tissue Section of the Canadian Pulp and Paper Association met in Montreal recently, largely for the purpose of dealing with a situation arising from the dumping of foreign light weight papers into this country. The section passed a resolution requesting the association's representative to wait on the Minister of Finance and on the Minister of Customs and Excise and recommend the appointment of a special appraiser qualified to pass upon all grades of paper imports. A resolution was also passed recommending to the tariff committee of the association the desirability of formulating a more scientific basis of paper duties, having in mind differences of exchange, transportation rates and labor conditions.

QUEBEC

Sir James Irvine Disembarks Here

Sir James C. Irvine, principal and vice-chancellor of the University of St. Andrews, Scotland, since 1921, and a member of the advisory council, department of scientific and industrial research, was a passenger on the Canadian Pacific S. S. Metagama which arrived in Montreal last month from Glasgow.

The main purpose of Sir James' visit to this continent is to receive the Willard Gibbs gold medal from the American Chemical Society. The last scientist of note to whom this medal was awarded was Madame Curie, famous as a result of her wonderful researches made in the field of radium and the radio-active elements.

Although Sir James was of inestimable value to the British Government during the war on account of his studies and discoveries of antidotes for poison gases, the American Chemical Society is presenting him with its high token in recognition of his valuable researches on sugars, and more particularly on starch and on cellulose. The presentation is to be made in Chicago on September 17, and Sir James will then return to Montreal and Quebec, via Toronto, in order to take the S. S. Montnairn.

Sir James highly commended the establishment of the Department of Industrial and Cellulose Chemistry at McGill University under Professor Harold Hibbert, particularly in view of the growth of Canada's pulp and paper industry.

F. P. L. to Have Temporary Quarters

Plans have been made for laboratories to be constructed in the basement of the McGill biological building to accommodate the Forest Products Laboratories of Canada while their old buildings are being torn down to supply land for the new Cellulose Building, to be commenced this month.

The biological building is called upon to supply laboratory space so that the work of the F. P. L. may not be impeded by the construction of the new building. The com-

COXE STOKERS

Where Steam Demands Are Severe

In industries such as the Pulp and Paper Industry, where steam demands are particularly heavy the Coxe Stoker has distinguished itself by its efficient operation and freedom from trouble.

Burns almost any available fuel. Can be brought to 300% or 350% rating in 3 to 5 minutes, and held there indefinitely.

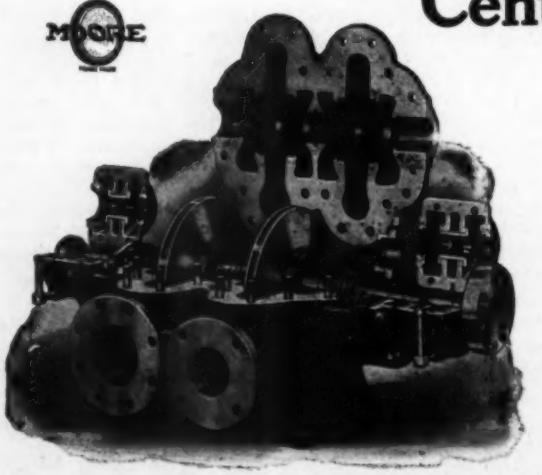
COMBUSTION ENGINEERING CORPORATION
POWER PLANT LIMITED EQUIPMENT

HEAD OFFICE—TORONTO VANCOUVER, MONTREAL, WINNIPEG

MOORE

Centrifugal Pumps

"Best at every turn"



"Never a Moment's Trouble"

This very large concern which uses Moore pumps almost exclusively, goes on to say—

"We simply specify the exact requirements and after the Moore pump is installed we can practically forget about it."

How would such a pump appeal to you?
Let us quote upon your next requirements.

Steam Turbines Centrifugal Pumps Reduction Gears

Offices in all principal cities

MOORE STEAM TURBINE CORPORATION
WELLSVILLE, NEW YORK

In Canada Ontario and East—General Supply Co. of Canada, Ltd., Ottawa Manitoba and West—Darling Bros., Ltd., Montreal

mittee in charge consists of Dr. R. F. Ruttan, head of the department of chemistry at the University, Prof. H. Hibbert of the department of industrial and cellulose chemistry, and E. P. Cameron, director of the pulp and paper division of the F. P. L.

West Hull township has consented to grant a fixed assessment of $700,000 to International Paper for its holdings there for a term of 20 years. When voting took place on July 16, of 158 ballots cast there were only 19 against the granting of the assessment.

Biermans Buys Former Munitions Plant

Built during the war, and used for the manufacture of munitions, the Peter Lyall munition plant at Longue Pointe, unused and for sale for a number of years, has been sold to J. H. Biermans, former president of the Belgo-Canadian Paper Co. The sale was effected through the Montreal Trust Co., acting for the United States Government, who acquired possession of the plant during the war.

Mr. Biermans, who is located at Shawinigan Falls, is now associated with the St. Maurice Valley Corporation, which has taken over and amalgamated the Belgo mill at Shawinigan Falls and the St. Maurice Paper Co.'s mill at Three-Rivers.

Count de Lesseps to Make Aerial Survey

Count de Lesseps, famous French airman, has arrived to take charge of flying operations in connection with experimental mapping for the Provincial Government of the Gaspé Peninsula, which is understood to be the first step in mapping the whole province from the air. The count is accompanied by Georges Ravit, of Paris, one of the greatest European experts in aerial photography, and general secretary of the Compagnie Aérienne Française, who will place his knowledge of the latest technical methods at the disposal of the Government and carry out the topographic operation in collaboration with the Government's surveyors. Another air pilot, mechanics, etc., complete the staff.

A hangar has been erected on the shore near Gaspé village, to house two light F. B. A. planes, one of which recently arrived from France. Photographic operations will be carried on from an altitude of 10,000 feet. In photographing, a lens with a focal length of 10 inches will be used, and a device for changing the film, called an aerophote, by which a film is automatically changed.

Siding for Ste. Anne Pulp and Paper

The Quebec Power Co., subsidiary of Shawinigan Water & Power, is putting in a 22,000-foot siding for the accommodation of the Ste. Anne Pulp & Paper Co., while the contractors erecting the buildings for this company are also putting in four or five sidings to facilitate the conveyance of the material to the site.

Between 400 and 500 men, principally from around the district of Ste. Anne de Beaupré, are now engaged in preliminary work on the new mills. This number, it is stated, will be gradually increased to 1,500 men, who will work in shifts during the 24 hours of each week-day in order that the construction may be completed by next February.

The Brompton Pulp & Paper Co. has let the contract for the erection of the steel work of its new newsprint mill at Bromptonville, which has been awarded to the McKinnon Steel Co., of Sherbrooke, Que. The price is said to be approximately $100,000.

Brig.-Gen. J. B. White, of Montreal, who is second vice-president of the Canadian Lumbermen's Association, and a director of the Canadian Forestry Association, was recently elected vice-president of the Canadian International Paper Co. He is also vice-president of the Riordon Pulp Corporation and of the Gatineau Co., Ltd.

John Overn, Jr., general manager of the Dominion Engineering Works, at Lachine, died last month at Philadelphia, at the age of 58 years. He had been in poor health for the last two years. Mr. Overn came to Montreal in 1923, from Philadelphia, where for many years he was manager of the I. P. Morris department of William Cramp & Sons, ship and engine builders. Through this connection he was well known in the hydro-electric circles of Montreal and of the Dominion.

The Division of Pulp and Paper of the Forest Products Laboratories, Montreal, has recently lost the services of two capable members of the staff. A. L. Davidson has joined the staff of the Department of Health, at Ottawa, and W. C. Lodge is now chief chemist for the Oswego Falls Corporation, at Fulton, New York.

Successful Canadian Financing in London

The directorate of the new Anglo-Canadian Pulp and Paper Mills, which will supply the papers controlled by Lord Rothermere with newsprint, includes the following: Lord Rothermere; Frank W. Clarke, president of the Gulf Pulp & Paper Co., Clarke City, Que.; Sir Herbert Holt, president of the Royal Bank of Canada; Hon. Smeaton White, president of the Gazette Printing Co., Montreal; Sir Charles Fitzpatrick, former Lieutenant-Governor of Quebec; R. C. McMichael, barrister, Montreal; Frank Humphrey, director of the Canada Steamship Lines; John Cowley, chairman of the Daily Mirror; R. A. Surshan, director of the Anglo-Newfoundland Co.; Hon. Esmond Harmsworth, director of the Daily Mail.

A debenture issue of 1,800,000 pounds sterling which was recently offered on the London market was oversubscribed more than twenty times, the applications totaling considerably over 20,000,000 pounds. In addition to the debenture issue there has also been purchased privately in England $7,000,000 worth of preferred stock, so that practically all the money for this enterprise has been raised in London.

This development is regarded here as of far-reaching importance, since it is the first wholly British financing of a Canadian enterprise since before the war. The tremendous over-subscription of the debenture issue indicates that the British investing public still has faith in Canadian investments, provided that the enterprise is sound and backed by responsible people.

The plant of the Metabetchouan Pulp & Paper Co., at Desbiens, is turning out 40 tons of pulp a day. It is planned to install a pulp drying machine, and to change over some of the screening equipment. This will not necessitate any additional construction.

The first paper machine of the Port Alfred mill is now turning out over 80 tons of paper a day, and the second machine will probably have been started by the time this is in print.

John Stadler, who was for many years connected with the Belgo-Canadian Paper Co., and is still associated with the Newfoundland Power & Paper Co., is now in Montreal, where he has opened an office in Rooms 522-23, 511 St. Catherine St. West, in connection with the projected construction of a newsprint mill by the Mistassini Pulp & Paper Co.

Cellulose Research Under Way

The research work under Dr. Hibbert, at the Department of Industrial and Cellulose Chemistry of McGill University, is already progressing nicely, and his organization now includes a staff of nine research workers, of whom seven are college or university graduates with degrees of B.Sc., of M.Sc., and two are Ph.D.'s.

A research fellowship has been established by the Abitibi Power & Paper Co., and has been awarded to Mr. Taylor, who has been connected with the research department at Iroquois Falls. The other men include: Dr. J. Ross, of the Forest Products Laboratories staff, who has been granted a year's leave to study technique in continental laboratories. On his return he will join Dr. Hibbert on special problems of cellulose chemistry. Messrs. Pidgeon, Houghton and Johnson are McGill graduates in science, who have been awarded bursaries from the National Council for Scientific and Industrial Re-

If the Doctor Wrote Your Prescription on a Stick of Wood

FOR the Pottawatomie Indian, the medicine man's ten remedies prescribed on a stick of wood probably served well enough. But your avoidance of ailments and your recovery from illness are made easier by the contribution of paper to health extension. Witches' herbs and the King's Touch have given way to the medical book and the prescription pad.

Every bottle on your medicine shelf at home speaks to you with a paper label. In the little black japanned box that will be opened when the Doctor has paid his last call, the care of your family is left to a few pieces of paper. Millions of little cellulose fibers stand at attention to serve the physical well-being of you and your loved ones.

Paper is one of the Genii dreamed of by the ancient imaginations of the Orient. It lives with us, serves our every need and whim—and we take it for granted.

Hammermill Paper Company

ERIE, PENNSYLVANIA

search. Mr. Rowley was in charge of the pulp and paper work for A. D. Little, Inc., and has practically finished his post-graduate work at the Massachusetts Institute of Technology for his Doctor's degree. He will work on the sulphite problems under a joint arrangement between McGill University and the Canadian Pulp and Paper Association. Mr. Jahn comes from Syracuse University with his Master's degree, and Dr. Hunten comes as a pupil of Dr. Maass, and has completed the work for his Ph.D. at McGill. He will work on the physical-chemical aspects of the degradation of cellulose in pulp. Besides these, there are a number of other applications pending.

Noted German Authority to Join Riordon Staff

Dr. Emil Heuser, who is one of the best known cellulose technologists in the world, will soon be taking up new duties in Canada. According to the Papier-Fabrikant, he is leaving the Vereinigten Glanzstoff-Fabriken, Berlin, by mutual arrangement, to take up his duties in the fall with the Riordan Pulp Corporation, at Hawkesbury, Ont.

This will be an important addition to the already strong staff of capable cellulose experts connected with the company, and marks another step in Canada's progress not only to retain but to improve the already dominating position that Canadian cellulose enjoys for the manufacture of rayon, as well as of paper.

Important Financing by I. P. Co. Subsidiary

The Gatineau Power Company, a wholly owned subsidiary of International Paper, recently made an issue of $25,000,000 first mortgage gold 5 per cent bonds due June 1, 1956. The offering was made simultaneously in New York and Montreal by a powerful group of investment houses, and the issue was oversubscribed half an hour after the books were opened.

A few days later the same company made an offering of $12,500,000 6 per cent sinking fund gold debentures, which was also placed simultaneously in New York and Montreal, and which was taken up as readily as the first one.

The securities back of these two issues are such as to give them practically the same status as that of a public obligation.

Dominion Engineering Works, builders of hydraulic and paper mill machinery, have declared a dividend of $3 per share of its capital stock. payable July 31 to holders of stock of record July 20. The payment is an initial one and covers no particular period. The business of the company is known to have been unusually good for some time now, and the payment of a dividend on these shares at the present time comes as tangible evidence of this. Taking into consideration the various programs of expansion in the pulp and paper industry at present under way, which will extend over several years, it can be taken for granted that this company is faced with a bright outlook.

Work Under Way at Limoilou

At the present time there are about 1700 to 1800 men at work on the excavations and other preliminary work in connection with the erection of the mills of the Anglo-Canadian Pulp and Paper Mills at Limoilou, a suburb of Quebec City. According to Frank W. Clarke, president of the Gulf Pulp & Paper Co. and director of the Anglo-Canadian company, who recently returned from England, the preliminary work is to be finished this fall, and construction of the mill and installation of the machinery must be completed by the end of next year. The building contract has been awarded to the Northern Construction Co.

The Anticosti Deal

For some time financial circles have been discussing with interest a new development in the negotiations for the purchase of the Anticosti Island timber limits. At first Wayagamack was the only company mentioned in this connection, but it is now understood that negotiations are under way whereby St. Maurice Valley Corporation and Port Alfred Pulp and Paper Corporation may participate in the acquisition of this valuable property from Senator Menier, of France, who is at present at the Island.

It is reported that a charter has been secured for the Anticosti Corporation, and it is understood that this company would be jointly controlled by the three companies. It is assumed that if the negotiations are successful the scheme will be financed by a bond issue of about six millions, back of which there would probably be, in addition to the very valuable timber limits, a contract to cover the period of the bonds, which would call upon the three newsprint companies to take a certain number of cords of wood each year on a stumpage basis. A fee of $1 per cord on 400,000 cords would be sufficient to provide for the interest on a $6,000,000 bond issue, and, with their augmented capacity, it would be quite feasible for the three companies to take this amount of wood each year.

Wayagamack has obtained an option on the property, and G. C. Piché, chief forester of the Provincial Government, is at present making a survey of the timber resources of the island. Final action on the part of the newsprint companies will depend on the results of his investigation, which is expected to be completed in the near future.

It is reported that the deal has just been closed between Senator Menier and representatives of the three companies mentioned above, and that the Anticosti Corporation will very shortly make an issue of $6,000,000 15-year first mortgage 6½ per cent bonds.

Recent incorporations at Ottawa include Ogden Minton Co., Ltd., of Montreal, with 5,000 preferred and 5,000 common shares, and Minton Vacuum Dryer Co. (Canada), Ltd., also of Montreal, with authorized capital of $600,000.

Progress at the new Templeton mill of the Canadian International Paper Co. is reported, and it is stated that one of their new machines will be in operation on January 1st of next year.

Notice has been given to the holders of certificates of deposit issued under the deposit agreement, dated February 2, 1924, that the St. Lawrence Pulp and Lumber Corporation Bondholders' Protective Committee has decided it is advisable to sell all the first mortgage serial sinking fund six per cent gold bonds of the corporation that were deposited with it under the agreement.

The crews of Laurentide's No. 6 machine recently established a fine record when they ran the machine for 57 hours without a single break.

Hector Dontigny, of Grand'Mère, on being struck by a block of wood fell into one of the drum barkers; and after being rolled about he managed to get out at the other end with nothing worse than a few bruises.

The Fraser Brace Engineering Co. will soon start the construction of a new 700-foot, reinforced concrete sewer discharge at Three-Rivers, to replace the one which caved in recently under the weight of the coal pile at the International paper mill.

Construction of the plant of the Bates Valve Bag Co., at Cap-de-la-Madeleine, is proceeding rapidly, and the roof has been laid. The new plant is expected to start up in a few weeks and will make paper bags for cement.

For the loss of his scow and loader in October, 1924, while in charge of the Dominion Towing & Salvage Co., Charles W. Cox, of Port Arthur, pulpwood contractor, was awarded $5,494 recently by Mr. Justice Kelly at Toronto. The towing company was engaged to tow a scow and pulp wood loader from Grand Marais to Pigeon Bay, a distance of 65 miles on the north shore of Lake Superior. The night was so dark that the tow could not be seen from the tug, and the scow and loader sank on account of a speed of seven miles an hour set by the tug.

REED SPAFFORD

Pulp Screen

WHAT DOES YOUR **POWER** COST YOU

UNHEARD OF LOW **POWER** PER TON

HALF **POWER** SAVED

VERY LARGE CAPACITY

VERY LIMITED FLOOR SPACE

OFFERED ONLY AFTER MANY MONTHS OF CAREFUL DEVELOPMENT

Improved Paper Machinery Company

Nashua, N. H., U. S. A.

ONTARIO

William Hamilton, Limited, of Peterboro, manufacturers of saw and pulp mill machinery and hydraulic power plant equipment, report that while business in the sawmill machinery line is rather quiet at the present time, they have closed some nice contracts in pulp mill equipment and water turbines.

The Canada Cement Co., of Montreal, has secured a large contract from the Kimberly-Clark Co., for their development at Kapuskasing, near Cochrane. It is understood the contract is for the delivery of nearly 200,000 barrels of cement. The New York Times is jointly interested with the Kimberly-Clark Co. in this deal and by 1928 the proposed mill will be producing 550 tons of newsprint daily.

United Paper Mills, Ltd., of Toronto and Hamilton, are putting on the market a new product which is a bond paper on one side and coated on the other. The use of this paper is for illustrated letters of four pages, catalogues, direct-mail literature, etc. The paper is made in Canada and comes in three colors. United Paper Mills are offering a prize of $25 for an acceptable name for the new line which they have just perfected.

Alex. Gillies died in Toronto recently at the advanced age of eighty-two years. Born in Glasgow, Scotland, he came to Canada with his parents, who took up their abode in Hamilton. Mr. Gillies was early directed into paper manufacture and distribution, and went to Montreal after receiving his education in Hamilton, where his uncle, Alexander Buntin, had mills as well as at Valleyfield, Que. After a thorough training there he returned to Hamilton and entered the firm of Buntin and Gillies. Several years afterwards he again went to Montreal and formed a partnership, first with Mr. Boyd and later with Mr. Patterson, under the name of Boyd, Gillies & Co., and Gillies & Patterson.

The Beaver Wood Fibre Co., Ltd., Thorold, have installed a continuous breaker beater with a capacity of one hundred tons per twenty-four hours.

The Dryden Paper Co., of Dryden, which for some years has been in the hands of a receiver, is now doing good business. It is stated that the time is not far distant when the company will be in such good financial position that it will be able to carry on successfully.

Negotiations between representatives of the Nipigon Corporation and the city council of Port Arthur have reached the stage where an agreement satisfactory to all parties concerned has been arrived at. It is understood that the agreement provides for the erection in Port Arthur of mills having a capacity of 400 tons of newsprint daily. The location is on the Strathcona property, with lake front just south of the site on which the Thunder Bay Co. is now building.

McAuliffe, Grimes Lumber Co., Ltd., Ottawa, is a newly-formed company with a capital of $40,000 and a provincial charter to conduct a general lumber and pulpwood manufacturing business. W. H. McAuliffe, D. F. McAuliffe and A. Grimes, all of Ottawa, are among the incorporators.

The annual picnic of the Don Valley Paper Co., Toronto, was held at Eldorado Park on July 2nd and was largely attended. Various sports and games were run off and valuable prizes were given to the winners. J. G. Wortz, president of the company, and A. P. Costigane, secretary-manager of the Ontario Pulp and Paper Makers' Safety Association, were among those present.

The master of the Supreme Court of Ontario, on application of the bondholders of the Mattagami Pulp & Paper Co., Smooth Rock Falls, set October 11, at 2:30 p. m., as the time for the sale by auction by the master of the assets of that company to satisfy the claims of bondholders and debenture holders.

The Fraser Companies, pulp and paper manufacturers, of Edmundston, N. B., have opened an office at Room 44, Commonwealth Building, Toronto, which has been put in charge of T. H. McDermott, formerly associated for 25 years with the Lincoln Paper Mills, Merritton.

Strathcona Paper Co., of Strathcona, report that they are running their two machines to capacity on sheathing paper, and on light chip and regular grades of board. The company have recently added a new beater and made other improvements to the plant, and will increase the capacity from 600 to 800 tons monthly. A new building is being erected over the waste platform, 65x120 feet, and 12 feet high, which will be used for storing raw stock.

Caught in the gear of the rewinder in the paper mill of the Spanish River Pulp and Paper Mills at Sturgeon Falls, William Roy Smith, aged 18, met a horrible death, being literally cut to pieces by the heavy machinery. The youth was employed as a wiper in the finishing room of the paper mill. It is believed he backed into the heavy gear of the rewinder when about to leave the room. The body was cut to pieces before the attention of his fellow-workers had been attracted and the machinery stopped, the accident taking but a fraction of a minute.

George Barber, late of the Great Lakes Paper Co., Toronto, has been appointed assistant secretary of the Spruce Falls Co., Toronto, and has entered upon his new duties.

Fire broke out recently in the plant of the Davy Pulp & Paper Co., Thorold, but was brought under control before much damage had been done. It is thought that the blaze originated from a spark in the engine room igniting a pile of shavings in the lower floors, the flames creeping up the wall to the roof.

By a vote of 1190 to 69, the rate payers of Fort William recently carried the by-law fixing the assessment of the Fort William Paper Co. at $300,000 for a period of ten years. The company has agreed to build a 90-ton sulphite mill and to add to its newsprint mill so that the production will eventually be brought up to 440 tons daily. The company was recently granted supplementary letters patent authorizing the converting of 100,000 shares of common stock without nominal or par value.

The Reliable Paper Box Co. is a new Toronto concern organized for the purpose of manufacturing solid boxes. The head of the company is J. Manchester. Premises have been secured in the Hermant Building, Toronto, and machinery is being installed.

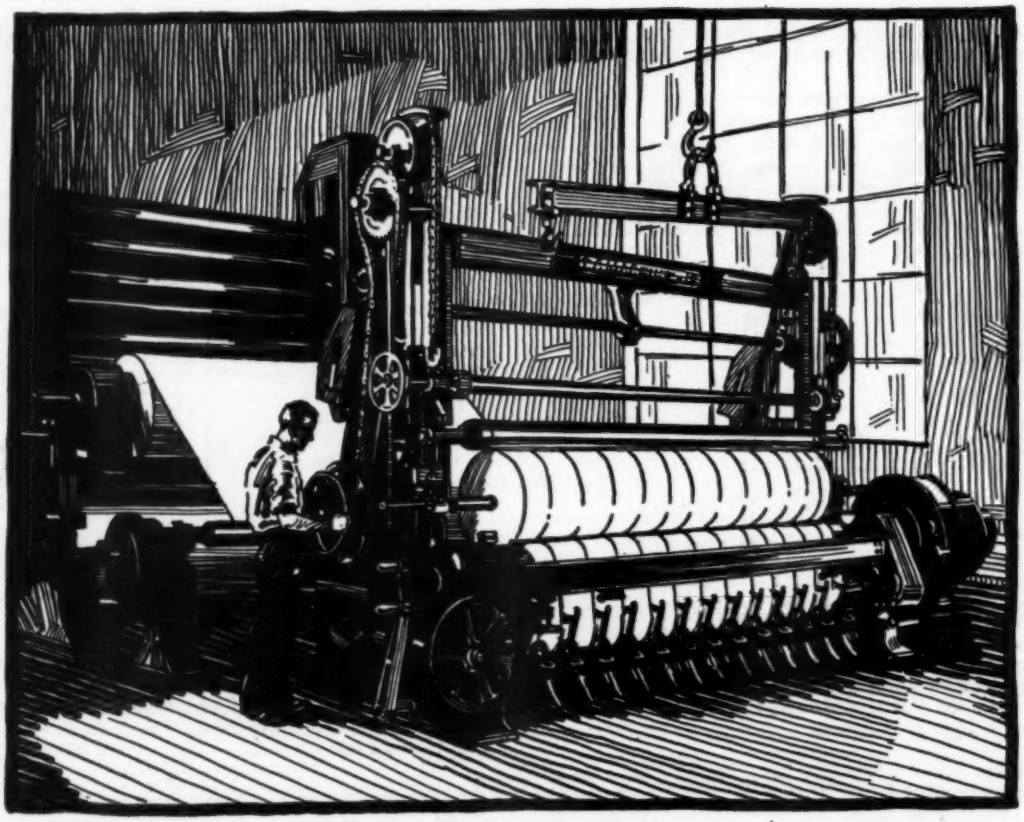
Superior Paper Mills Granted Fixed Assessment

The Superior Paper Mills, which will shortly begin operations at Thorold, have been granted a fixed assessment of $10,000 for ten years. Only a small vote was polled but the by-law carried, there being one lone ballot recorded in opposition to the measure. The company have taken over the buildings of the old Peerless Pulp Co. and will erect extensions to house two machines.

The equipment for the new mill will include one cylinder tissue machine with a trim of 55 inches, and one 66-inch trim Fourdrinier machine designed and equipped for manufacturing light weight specialty papers. There will be three 2,000-lb. beaters, two of the regular hollander type and a third a specially designed de Cew beater. The mill will be electrically driven throughout and will use steam only for the cooking of the rags and the drying of the paper. The products will include all the grades of light-weight cylinder papers, such as pattern tissue, waxing and twisting tissues, and the various colors of packing tissues, also lightweight

See Page 331 in the 1926 Paper and Pulp Mill Catalogue

FOR GOOD ROLLS



at low production cost —

CAMACHINE 18 meets every requirement. Specifically designed for service as winder on paper and board machines, or as rewinder in finishing room, it will produce straight edged firm rolls, of any face width or any diameter.

The CAMACHINE Principle, which is comprised of the Score-Cut method of slitting and the Riding Roller Surface Wind, is utilized to fullest advantage. By its application clean cut, hard rolls are produced with a minimum of broke due to web breakage. A saving in production cost is realized by extremely narrow trim on the edges of the web. The Score-Cut method insures automatic separation of finished rolls and is simple and dependable in its operation at high speeds.

CAMACHINES are sold on the basis of a free trial in your own mill. A proposal covering prices, delivery and free trial will be sent on receipt of your request, giving web width.

CAMERON MACHINE COMPANY

61 Poplar Street, Brooklyn, New York, U. S. A.

Fourdrinier specialties in white and colors. The annual output will be about 3,000 tons.

Under the present schedule the mill should be in operation about November 1st of this year and will employ fifty people at the start.

It is reported that the Daverin Paper Co., operating at Camden East, will shortly resume operations, after having been closed down for some time.

J. W. Raines, for the past three and a half years superintendent of the Montrose Division of the Provincial Paper Mills, at Thorold, has resigned to accept a position on the selling staff of the Lindsay Wire and Weaving Co., of Cleveland, Ohio. He will have charge of the Eastern Division of the United States. His place has been taken by Arthur Camp, formerly of the Michigan Paper Company, Plainsville, Mich.

Thirty members of the Ontario Division of the Canadian Manufacturers' Association recently spent a day visiting the mill and town at Iroquois Falls. Among the visitors was Chas. Rhodes, of Auckland, New Zealand, managing director of the island's largest mine.

The woods department of the Abitibi Power and Paper Co. recently took the complete mill office staff for a trip over the Abitibi Lakes, visiting all the sweeping and towing operations. The idea of the trip was to have every person in the office, including the stenographers, see the operations at first hand so as to facilitate the work of the office.

B. Branch, who for the past seven years has had charge of the Toronto office and Canadian sales of the Canadian Barking Drum Co., with quarters in the Royal Bank Building, has severed his connection with that organization, and his successor has not yet been appointed.

MANITOBA

The Manitoba Pulp and Paper Co., a subsidiary of the Spanish River Pulp and Paper Mills, which is constructing a 200-ton newsprint mill at Pine Falls, has ordered its 230-inch newsprint machines from the Pusey and Jones Company, of Wilmington, Del.

BRITISH COLUMBIA

Westminster Paper Mills to Increase Capacity

A new process of turning out paper napkins and towels is now coming to the front. The patent manufacturing rights to this process have been purchased by the Westminster Paper Mills, Ltd., New Westminster, which will carry out an expansion program involving an expenditure of about $250,000. The company expect that the six new machines which have been ordered in the East will reach the mill in the course of a few weeks, and preparations are being made for the setting up of the equipment. The six machines recently ordered take the paper from the large rolls and cut and fold the napkins or towels in any required size or fold, and they automatically band the bundles of 40 or 50, as the order requires.

Purchase of the manufacturing rights was made by the Westminster Paper Mills following a recent visit to New York by J. J. Herb, president of the company. Mr. Howitt, the American inventor, visited New Westminster recently after a tour of the paper plants in Canada, and gave the preference to the Westminster mills on account of their satisfactory location and the general layout of the plant.

Major C. S. Cowan, for more than a year in charge of the Vancouver office of the British Columbia forest service, with supervision over the most important timber areas in the province, has resigned his position to become forest engineer of the Canadian Forest Products Co., which is the result of the reorganization of the Beaver Covex Pulp and Timber Co. This concern is now planning extensive pulp developments near Alert Bay for the near future. The company owns two billion feet of timber, and Major Cowan's first task will be to survey this tract.

Effective November 1, all men engaged in the lumber industry in British Columbia will receive a minimum wage of 40 cents an hour, according to a recent announcement by the board charged with the administration of the Male Minimum Wage Act. The order is defined as including all the operations in connection with logging, shingle mills, box factories, pulp and paper mills, veneer plants, and cooperages. Approximately 40,000 persons are employed in these operations.

The Canadian Scottish Paper Mills, of New Westminster, are expected to start operations about the middle of this month. All the machinery has arrived on the ground and is being installed as fast as possible.

Chief Forester Back from Forestry Congress

P. Z. Caverhill, chief forester of the province, is back from Europe where he attended the World's Forestry Conference in Rome. After the Conference he visited Switzerland, Germany, Finland, Norway and Sweden to investigate forestry and manufacturing methods in those countries, returning by way of Great Britain.

In an interview Mr. Caverhill stated that, while artificial methods of reforestation are used to some extent in most of the European countries which he visited, the trend is way from artificial planting and in the direction of fire prevention. It is found that, given sufficient protection, natural reforestation is much more satisfactory. He was much impressed with the quality of the manufacture of lumber in Norway and Sweden. Practically all of the material in these countries is gang-sawn and is put in pile without being trimmed until the time of shipment when end-checks from seasoning are cut off. The stock thus goes to the market in first-class condition.

Struck by a falling snag during logging operations at Call Creek, James Burns, aged 40, sustained injuries that caused his death a few hours later while he was being conveyed in a gas boat to Alert Bay. A native of New Brunswick, he is survived by a sister, Jessie Stanning, at McAdam.

NEW BRUNSWICK

At the 1926 meeting of the Home Paper Box Co., with a plant at St. Stephen, the financial reports disclosed a satisfactory condition. The company is controlled by the Ganong interests of St. Stephen. G. F. Ensor, who has been secretary-treasurer of the organization, was again elected to that position.

At one time it was reported that the equipment of the Van Buren plant of International Paper would be transferred to Rumford Falls, where enlargement of a paper box, carton and bag plant would be made. Again, it was reported that paper boxes only would be produced at the Van Buren mill. Now it is stated that neither of the reports was correct. According to a committee of business men of Van Buren, the mill will be reopened by International Paper, with the likelihood that, while the manufacture of pulp will be the chief line, the production of boxes, cartons, bags, etc., may be taken up as a side line.

Kaare Smith, forestry engineer in the employ of the Pejepscot Paper Co., St. John County, has returned from Norway, where he was visiting relatives at Trondhjem. He reports that many Norwegian woodsmen and small farmers are desirous of settling in America.

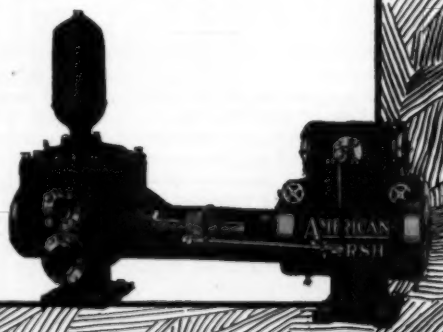
Dominion Construction Co. is reported to have secured the contract for the construction of the power plant at Grand

American-Marsh Pumps Excel in Service

IN EVERY case where American-Marsh Pumps are installed they have proven dependable and economical to operate.

It is such service and performance that has caused many experienced users to standardize on American-Marsh pumps.

Whether it be steam, power or centrifugal pumps you are interested in, there is an American-Marsh exactly suited to your requirements.



Write for Bulletin

American Steam Pump Co., Battle Creek, Mich.

Expert Lubrication Service which costs you *nothing*

THE Tide Water Engineering Bureau is at your service in solving all lubrication problems. This expert service is entirely *without cost or obligation.* Send a card today and one of our Staff Engineers will be glad to call at your mill to make a lubrication survey under your direction.

The Tide Water Power Group
—*for paper mill lubrication*

TYCOL GEAR COMPOUND
A soft, semi-fibrous grease for enclosed gears under heavy pressure.

TYCOL MEDIUM YARN GREASE
For beater bearings where high temperatures, heavy pressures and water are present.

TYCOL YARN GREASE
For dryer and other bearings operating at high temperatures.

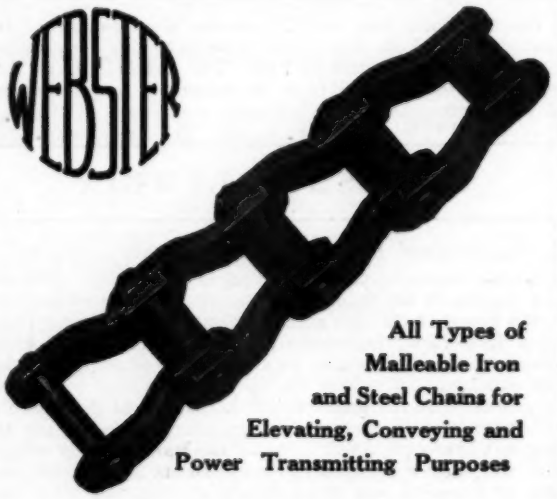
TYCOL LUBRICANT NO. 1
A medium hard grease for Jordans, grease lubricated calender rolls, and for general use.

TYCOL GREASE
A hard grease for replenishing Tycol Yarn Grease.

TYCOL GEAR COATING SOFT
A viscous lubricant especially recommended for use on slow-moving open gears.

TIDE WATER OIL SALES CORPORATION
11 BROADWAY NEW YORK

WEBSTER



All Types of Malleable Iron and Steel Chains for Elevating, Conveying and Power Transmitting Purposes

We can furnish all types of malleable iron and steel chains, including plain detachable, combination steel and malleable iron, riveted drive, ley bushed, malleable iron roller and steel bushed roller drive chains.

Catalog on request.

THE WEBSTER MFG. COMPANY
4500-4560 Cortland Street
CHICAGO

Falls. According to Premier Baxter, the formal opening of the power development work at Grand Falls will be on the 10th instant.

NOVA SCOTIA

W. H. Chase, of Wolfville, president of the Avon River Pulp and Power Co., was a recent visitor in Halifax. Although no announcement was made as to the nature of his business, it is understood that it was in connection with the new pulp mill projected by the Avon River Pulp and Power Co. The location of the proposed mill has variously been rumored as being Windsor and Hantsport, but no decision has yet been announced as to what choice has been made between the two.

It is intended to proceed without delay with the reconstruction of the pulp mill at Caledonia, which was recently destroyed by fire. It is hoped that the new mill, which will be larger than the original one, will be completed early in 1927.

Summer Meeting of Canadian Woodlands Section

The Woodlands Section of the Canadian Pulp and Paper Association held their summer meeting during the week of July 19th to 24th. At the invitation of the Laurentide Company, the meeting took the form of a visit to the timber limits of the company in the Lake Manouan district. Everything had been done by the Laurentide Company to ensure the success of the meeting and keen interest was shown by the members in the various operations and the methods of getting the wood down to the mill.

The party left Montreal on July 19th in a special car and were joined by other members at Grand'Mère and at Hervey Junction, from where they proceeded to Casey, which is the main line rail-head and headquarters for the surrounding limits under operation.

After breakfast at Casey on Tuesday morning, the party were transported by tractor and motor boat to 17 Mile Depot, where they inspected the depot, work shops and hangars. They then proceeded by boat to Dam A, where they looked over the logging railway, and thence by tug boat to Tobacco Bay where they spent the night.

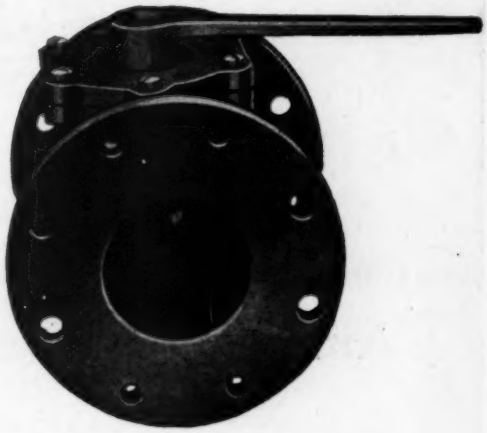
Wednesday was devoted to inspection of the Tobacco Bay depot and the cut-over areas, piers and booms in the neighborhood of the depot, after which the members went to Dam B where they spent the night under canvas. On the following morning the Watoussi flume, between Dam B and Lake Watoussi, was inspected from one end to the other. This flume is nearly five miles long and has a maximum capacity of about 5,500 logs per hour. The remainder of the day was devoted to the piers and booms and the rafting and towing operations on Lake Watoussi, the party returning to Dam B for the night.

On Friday the return signal was given. The party reached 17 Mile Depot in time for lunch and had supper at Casey, which they left at midnight, arriving in Montreal Saturday forenoon.

Special interest was shown in the tractor road, the methods of loading, transporting and unloading the scows carrying supplies to the Tobacco Bay Depot, the Manouan railroad portage, the caches, machine shops and the booming and rafting operations on the lakes.

A hearty vote of thanks to the Laurentide Company, and especially to Mr. Bowden and other members of the Laurentide staff who did so much to make the trip a success, was moved by Chairman H. G. Schanche, and carried unanimously. Several members availed themselves of the invitation extended by the Laurentide Company to stop off at Grand'Mère for an inspection of the mechanical sorting apparatus on the river and of the nursery at Proulx.

The members all expressed themselves as being highly pleased with the trip and with the arrangements made for them by the Laurentide Company, and the success of the meeting was further assured by good weather, the rain kindly falling at night.



Built for Your Purpose!

THE Barker Quick Opening Stock Valve meets all the requirements you place on it—with features which all mill men have been seeking.

Simplicity and strength are both present. This valve is built on an entirely different principle from other gate valves, in that a straight bronze plug is used instead of a gate, with a cast-iron body designed to reduce plugging to a minimum. Has no bonnet to leak. Valve is furnished with a long handle to open and close, with sufficient leverage to shear off ordinary obstruction without using a piece of pipe. Valves may be placed in any position.

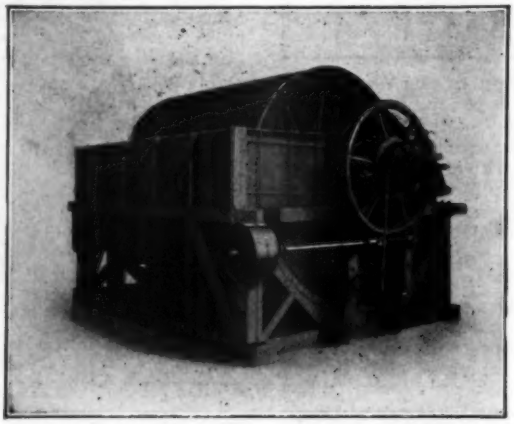
The Barker Quick Opening Stock valve **does not require cleaning** after each different color or grade of stock has passed through.

The many repeat orders being received by us are the best proof of satisfaction. Install this valve and note the difference.

GREEN BAY BARKER CO.

Green Bay, Wisconsin

Makers of the famous Green Bay Barker



OLIVER FILTRATION

is adaptable to so many uses that it is not possible to put all about them in an advertisement. However, here's a report from Wisconsin:

"Our 135 sq. ft. Oliver Decker is handling *60 to 65 tons per day* screened Kraft Pulp, density .4% bone dry, and discharging at 8% bone dry. Feed is at the rate of approximately 20 gallons per sq. ft. per minute. *Fibre loss only 0.125 lb. per 1,000 gallons.*"

Olivers are also being used for Thickening; Washing Pulp—Sulphite, Soda and Kraft; Washing Lime Mud and Reclaiming White Water Waste.

Oliver Filtration can be adapted to any of these operations in *your* mill with profit to *you*.

We can tell you how they can be

Oliverized

See page 381 in the 1928 Paper and Pulp Mill Catalogue

Oliver Continuous Filter Co.

San Francisco
802 Cunard Building

New York
1422 Aeolian Building

London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

MICHIGAN NEWS

Flywheel Explodes at King Division of Allied

On Wednesday evening, July 21st, at about 11:55, the big flywheel which runs the old beater room at the King Division of the Allied Mills, Kalamazoo, blew up and completely wrecked the engine. It tore off the roof above the flywheel and scattered pieces of the wheel over a space of about three thousand feet. Four or five pieces came down through the roofs of different sections of the division wrecking everything in their path.

Two or three employees sustained minor injuries, but none chanced to be in line with the flying fragments of the wheel, and in consequence all escaped serious hurts.

Property damage as a result amounts to thousands of dollars, but the greatest loss has been in the loss of production while the necessary repairs were being made. Engineers at the plant were unable to offer any explanation for the bursting of the wheel. The explosion came without warning.

The Munising Paper Company, Munising, has announced plans to install $150,000 additional machinery in its plant and will erect a dock at a cost of $115,000 with a capacity of 60,000 tons.

Claims Compensation Against Standard Paper Co.

Claim for compensation brought by Louis J. Doner against the Standard Paper Company, Kalamazoo, was heard on July 26th before Commissioner John V. French of the State Industrial Commission. Doner stated that while he was at work feeding a press at the Standard Paper Co. on March 2nd, he felt something "give way" in his side and immediately began to suffer intense pain. The attending physician stated that in his opinion some ligaments had been torn loose.

The claim was contested by the Michigan Mutual Liability Company with which the defendant carries industrial accident insurance. The case was taken under consideration by the commissioner who had up to this writing not yet rendered his decision.

It became apparent on July 3rd that it will be many months before the dissolution of the Eddy Paper Company of Michigan is legally effected. After listening to the arguments of ten attorneys, Judge Johnson of the circuit court, ordered briefs submitted in the case, setting the final day for their acceptance on September 10th.

The first consignment of china clay from Cornwall, England, arrived in the steamer Hillglen at South Haven on July 1st, having left Fowey, Cornwall, May 28th. Part of the cargo was delivered to coating mills in the Kalamazoo Valley district, and the balance was brought across Lake Michigan to Milwaukee for Wisconsin mills.

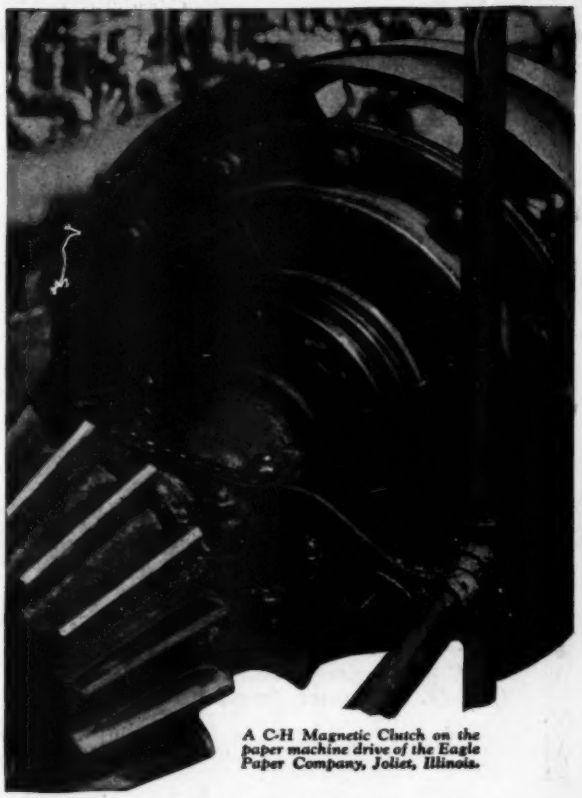
Mill Host to Representatives

Representatives of the Allied Paper Mills, Kalamazoo, and the Chicago Paper Company, paper merchants of Chicago, about sixty in all, were in Kalamazoo, July 21st and 22nd, as guests of the two companies for the annual sales conference and golf tournament. Luncheons and dinner were served at the Kalamazoo Country Club.

There was an inspection of the King Division of the Allied Mills and golf was played on the Kalamazoo Country Club links both mornings of the conference. The game on each occasion was the 18-hole medal play handicap, the individual player's club handicap applying. A large number of prizes were distributed on the closing day.

Anniversaries of Two Kalamazoo Mills

The Hawthorne Paper Company, the first mill in Kalamazoo to be devoted to the manufacture of bond, ledger and writing papers, celebrated the fifteenth anniversary of its organization on July 11th. The original promoters of the



A C-H Magnetic Clutch on the paper machine drive of the Eagle Paper Company, Joliet, Illinois.

Place your starting in the hands of an expert!

At the touch of a button this paper machine load is picked up without jerk or jar —because a C-H Magnetic Clutch is used.

There is just enough lag while the magnetic force is building up to prevent harsh sudden grabbing. Smooth and gradual acceleration is the result—regardless of the finger that touches the button. No experience is needed to be an expert.

And, being simple in design, without toggles, levers, or links, maintenance is reduced to a minimum.

This instant easy control of engagement and disengagement, simplicity, and the small space required, fit them for many applications in your plant.

Also makers of C-H Control for all types of motors used in paper mills.

Have you a power-factor problem?

You can make a big saving in your monthly power bill by using one or two power-factor-improving synchronous motors with C-H Clutches to take care of the starting.

The C-H Clutch Booklet P-11 tells how it is done. A line from you will bring a copy to your desk.

The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
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MILWAUKEE, WIS.

CUTLER C-H HAMMER
Industrial Efficiency Depends on Electrical Control

Protection Under the Severe Conditions in Your Mill

Hot moist conditions and the prevalence of chemical fumes play havoc with the metal structures and equipment in a paper mill. They play havoc also with the ordinary paints and coatings used to protect these surfaces. No ordinary paint can long withstand high temperatures, continuous moisture and the action of chlorine and caustic fumes.

BITUMASTIC SOLUTION, however, is *not* an ordinary paint. It is built from a bitumen base which is impervious to moisture, resistant to high temperature and chemically inert. A protective coating more ideally suited to conditions in a paper mill has never been developed while, at one and the same time, it provides a high-gloss finish which adds beauty of appearance to the surface it protects.

Write for details and the names of paper mills now using BITUMASTIC

SINCE **BITUMASTIC** 1854
REG. U.S. PAT. OFF

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322 S. Delaware Ave., Philadelphia — Union Trust Building, Cleveland
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DESIGNERS AND BUILDERS OF

PAPER MAKING **MACHINERY** PAPER CUTTING
PAPER BAG MAKING

THE SMITH AND WINCHESTER MFG. CO.

ESTABLISHED 1828
AT
SOUTH WINDHAM
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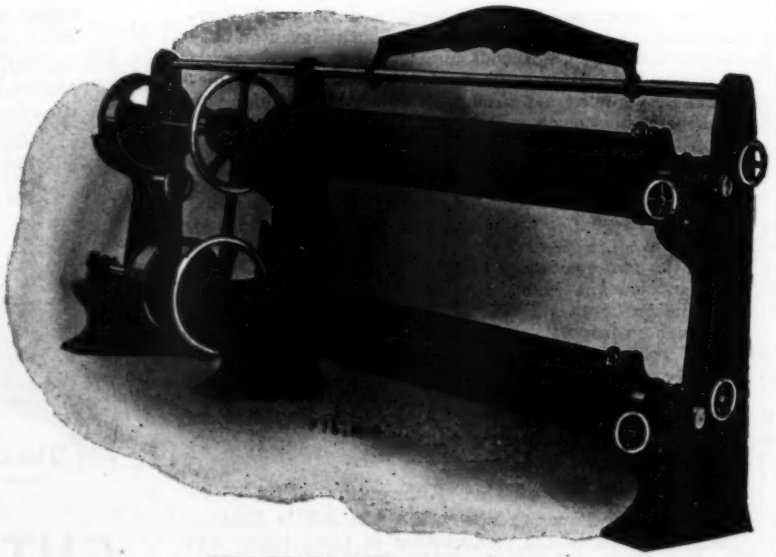

TWO DRUM REEL—Heavy Pattern

company were the late A. H. Dwight and Robert L. Pease. The concern operates a two-machine mill and has a relatively small production as to tonnage. Like the Lee Paper Company at Vicksburg and the Peninsular Paper Company at Ypsilanti, it runs exclusively to high grade papers.

The Bryant Paper Company began actual operations 30 years ago the past week, when the first machine was installed in the mill in Alcott street, Kalamazoo. This was a 116-inch fourdrinier, the smallest machine now in use of the mill and has been in steady production practically all the time since installed. Only what became known as the Bryant division of the mill was in operation at that time, the daily production being about fifteen tons. The Bryant division now has five machines and a sixth is being installed. The entire plant has ten machines and makes 500,000 pounds of book paper daily.

Noah Bryant was the original president of the company, with the late Frank H. Milham as general manager.

The Paper Mill Cost Body Meets

The Cost and Technical Association of the Paper Industry, Kalamazoo division, held its July meeting in the afternoon and evening of July 28th, at the Paw Paw Lake Country Club. Following the dinner, there were addresses by V. F. Quigley, George K. Ferguson and H. S. Farm, the latter of Chicago. During the afternoon many of the members enjoyed golf, bowling and bathing.

NORTHERN NEW YORK NEWS

Pulp and Paper Shipments Increased

The paper and pulp products that are being shipped from various points in Northern New York over the St. Lawrence division of the New York Central has greatly increased the loaded car movements in this section. Division Superintendent W. A. Hamler reports that paper and paper products shipments have increased to the extent that they exceed all other commodities which are shipped over the division.

The paper that is being shipped includes newsprint and a coarser grade of paper used for cheap magazines. The products include paper towels, pads and writing paper. The shipment of the two products doubles that of any other commodity over the division.

The shipment of wood pulp and pulp wood also rates high and the amount is increasing monthly.

Workmen engaged in tearing down a pile of pulpwood for the Oswego Falls and Paper Corporation on July 21, enjoyed the unique experience of having a snowball fight while the temperature registered 96 in the shade. The wood was stacked last winter and the pile was 150 feet long, 100 feet wide and 50 feet high. When the center of the pile was reached a considerable amount of snow was uncovered.

Considerable pulp and pulpwood were shipped through the St. Lawrence river in June, navigation reports show. There were shipments of 63,735 cords of wood, 127,470 tons of crude pulp and 5,124 tons of manufactured pulp shipped up stream. Last year for the same month the figures were 53,769 cords of wood, 107,538 tons of crude pulp and 7,010 tons of manufactured pulp.

Lower Coal Rates Asked

Nineteen Northern New York concerns, most of them paper companies, are participants in a complaint lodged with the interstate commerce commission against the Baltimore and Ohio railroad and others, calling for a reduction in the freight rates on bituminous coal. The complainants are represented by Joseph A. Quinlan, traffic manager of the St. Regis Paper Company.

The following paper companies are represented in the complaint: St. Regis Paper Company, Champion Paper Corporation, National Paper Products Company, Taggart Brothers,

STEEL
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For Maintenance, Construction and Repairs

Bars	Boiler Tubes
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Write for the Ryerson Journal and Stock List —the "Key" to Immediate Steel
JOSEPH T. RYERSON & SON INC
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Are you keeping abreast of the remarkable growth of Embossing as a production factor in industry? New products resulting from new Embossed effects; increased production—improved quality—being secured in a widespread variety of manufacturing lines in Paper, Textile and related industries. If you are now doing Embossing—or would like to know if you could profitably use it—to lift your product above competition—
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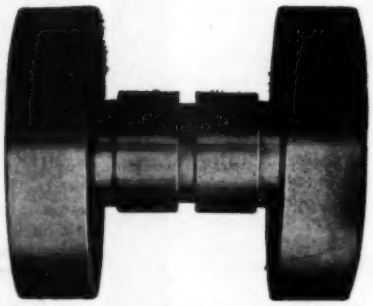
THE JOHNSON FRICTION CLUTCH

As Used on the

Wesel Power Matrix Rolling Mills

The No. 5 Double Johnson Friction Clutch is the size used on this machine.



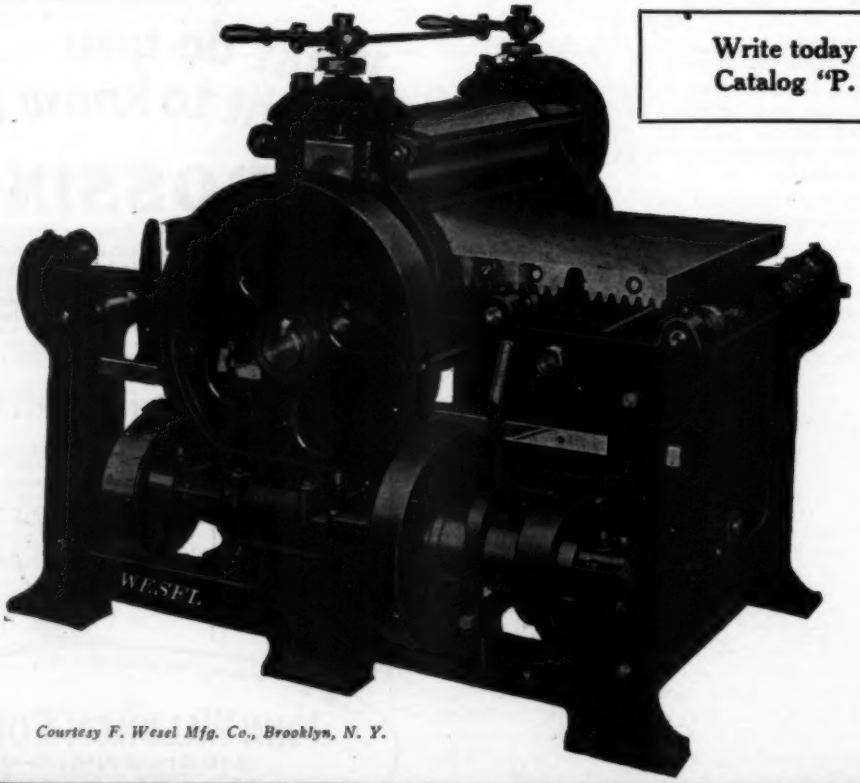
Johnson Double Clutch with pulleys mounted

The Clutch controls the speeds—low speed for dry mat and higher speed for wet mat.

The JOHNSON "Friction Control" is very popular among the machine builders for all kinds of machinery where medium or light power is required.

Let us work out your problem for you at small cost or advise you how the JOHNSON Friction Clutch will fit your drive.

Write today for Catalog "P. I."



Courtesy F. Wesel Mfg. Co., Brooklyn, N. Y.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

Inc., Harmon Paper Company, Warren Parchment Company, West End Paper Company, Brownville Board Company, Brownville Paper Company, Gould Paper Company, Knowlton Brothers, Inc., Sherman Paper Company, Degrasse Paper Company and the Bagley & Sewall Company, manufacturers of paper making machines. Twenty-six carrier railroads are named as defendants.

Can Corporation Opens New Plant

The new half-million dollar plant of the Smith-Lewis Fibre Can Corporation, manufacturing the Sani-Can fibre containers, which has been under construction at Lowville since November, has been opened. Two grades of fibre containers are being manufactured.

The machinery for the manufacture of the spiral wound can has been in operation for some time. A higher grade of can which is to be made by the company is the convolute can. As this can is wound from sheet stock, it is possible to make a high grade decorated can and a printing press has been installed.

The machinery for winding the printed sheets into tubes has been installed and production of this style of can will start soon. The spiral wound can is used for handling ice cream and delicatessen products. The convolute can is a new product and is made with impregnated walls. No glue is used in the manufacture. The product is put out by only one other firm, located in Chicago, and it has been very successful.

Up to the first of this year the plant had been used by the Beaverland Corporation for the manufacture of milk bottle tops. The entire plant is of fire-proof construction. The fibre board used in the manufacture comes from the J. P. Lewis paper mills at Beaver Falls. Stock cans are made with a capacity of from one-quarter of a pint to a gallon. The cans for shipping are packed in fibre containers, each containing from 30 to 400.

Carthage Co. Increases Capital Stock

Certificate of increase and classification of stock of the Carthage Pulp & Board Co. has been filed with the county clerk of Jefferson county. The original capitalization of the concern was 500 shares of stock of no par value. The new capitalization is to consist of 12,552 shares of stock of which 6,000 is to be common of no par value and 6,552 is to be 7 per cent preferred of a par value of $100.

A short time ago a certificate was filed showing the change of name of the Carthage Paperboard Company to the present name. Henry C. Reed, of Philadelphia, Pa., is president. The former concern was organized by the bondholders of the defunct Carthage Sulphite Pulp & Paper Co.

Charles E. Norris, a director of the St. Regis Paper Company, entertained Governor Alfred E. Smith after the governor visited President Coolidge at White Pine Camp. Mr. Norris entertained the Governor on the estate of the late William Rockefeller. The St. Regis company is clearing the land of the pulp wood supply. The Governor caught a number of trout.

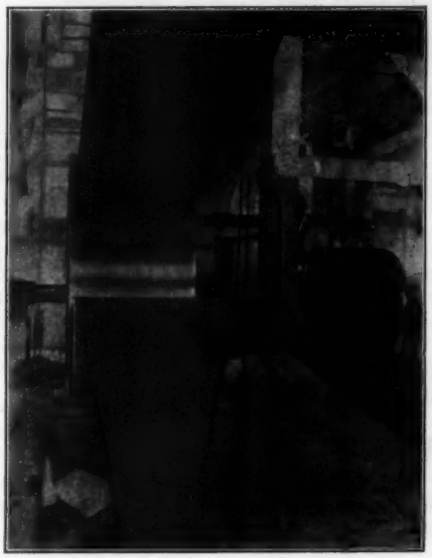
Elmer Smith, 22, of Luzerne, was instantly killed on July 12, when his body became caught in a machine in the Corinth plant of the International Paper Company. From the position of the body, it is thought that his hand was caught between the reel and the drum.

New York State Leads in Reforestation

The Northern New York Utilities, Inc., one of the companies controlled by the Floyd L. Carlisle interests, has taken the lead in reforesting in New York State. That company this spring planted 540,000 trees on its four plantations. In addition to planting trees, the company forester, J. E. Keib, held a series of conservation meetings throughout northern New York, 24 in all, which had an average attendance of 100 people. The meetings were held for the purpose of interesting owners of unproductive lands in the planting of trees.

New York State leads all other states in the union in re-

RHOADS
Watershed Tannate Leather Belting



A Real Saving in Production Costs

Our picture shows the production end of a 48-inch, three-ply Watershed Tannate Belt installed by a large lumber company. The same people also own a near-by paper mill. In both mills Rhoads Leather Belts have been used for nearly twenty years.

The mechanical engineer of the paper mill, speaking of an installation of Rhoads Watershed Tannate Belts on a group of barking machines calls it "the prettiest installation" he has ever seen. He claims the Tannate Belts "are saving $250.00 per day in production costs."

The longer life and stronger grip of Tannate Belts often increase output. They are always sold under the Rhoads Service Guarantee.

Use Rhoads Tannate Lace Leather
It outlasts rawhide three to five times

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TANNATE
TRADE MARK
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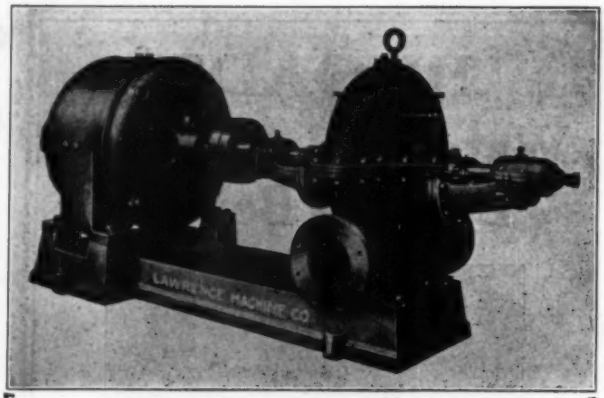

LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE COMPANY
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Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

260 Paper Mills

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Worldwide Satisfaction!

Day in and day out, in thousands of plants throughout the world, Falls Transmission Machinery is rendering efficient, lasting, trouble-free service. Thus it maintains the Falls reputation of superiority in design, construction and performance.

Presenting a complete line of correctly designed, honestly built and consistently priced transmission machinery, Falls is indeed the logical source of supply for equipment of this kind.

Prove this to your own satisfaction by sending for Handbook 18-B today.

The Falls Engineering Service is at your disposal. Feel free to use it whenever the occasion requires.

The Falls Clutch & Machinery Co.
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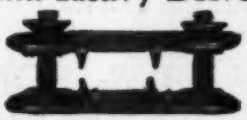
FLEXCO

FASTENERS with the Scientific Compression Grip

for Conveyors and Heavy Drives



Compression of the belt end prevents ply separation and trouble at the joint.

Makes a butt joint that is tight, long lasting and with a great reserve of power.

Recommended by belt makers. Sizes for belts ¼ in. thick and up. Templates supplied to insure correct application.

Trial sets supplied on a "make good" basis. Write, sending details of drive.

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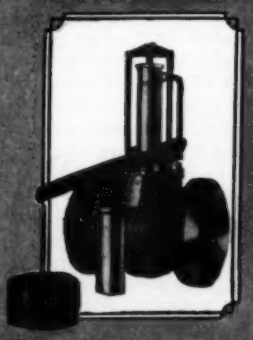
VALVE MAKERS FOR OVER FIFTY YEARS



THE DESIGN of the Davis Pressure Regulator is based upon full knowledge of all the requirements of modern generation and use of steam.

Wherever boiler pressure must be reduced to the correct service pressure for auxiliaries, heating, and process uses of steam, Davis Regulators maintain the exact lower pressure automatically under all conditions of operation.

The Davis Regulator is sensitive and accurate, and is not affected by high velocity steam. Pressure is counterbalanced by weight, and the action of the regulator is visible. The engineer can test a Davis Regulator by hand as often as he likes. Send for the Davis catalogue and get all the details.

DAVIS VALVE SPECIALTIES
STEAM SAVERS SINCE 1878

G. M. DAVIS REGULATOR CO., 422 Milwaukee Avenue, Chicago, Ill.

P18—Gray

forestation. It maintains the largest forest tree nursery in the United States and it is rapidly increasing its acreage of planted trees in spite of its large urban population. New York State has planted about 100,000 acres in forest lands and last year the community forests planted 11,623,142 trees. The capacity of the state nurseries is being increased from 35,000,000 to 40,000,000 trees a year. Only $2,000 a year goes from the Federal Government to New York State to assist in the work, but the State expends from $60,000 to $70,000 a year.

New York City led all other communities in the number of trees planted, there being 2,207,000 in the municipal forest which is located at the source of its water supply. A large number of the trees were planted in Northern New York.

Ralph O. Spencer of Watertown, assistant superintendent of the Taggart Brothers mill, and Miss Sara Judith Bergenstock, of Milton, Pa., were married in Philadelphia, Pa., recently. The bride for two years was deaconess of Faith Chapel in Watertown. The newly-married couple have taken up their residence in Watertown.

A number of paper manufacturing companies have presented claims in bankruptcy court against the Rochester Herald Company, publishers of the Rochester Herald. The paper was recently merged with the Rochester Democrat and Chronicle. Among the paper companies having claims are: Beaver Pulp & Paper Co., $37,393; Alling & Cory Co., $8,612; Finch Pruyn & Co., $17,000; International Paper Company, $28,000.

District Attorney Wilcox has found that the death of William A. Schell, who was found dead in the elevator of Knowlton Brothers mill, was due to natural causes. Relatives of the dead man claimed that death was caused by electric shock due to defective wiring in the elevator.

Paper Mill Expert Visits Watertown

Francis W. Warren, of Paris, France, an internationally known paper mills expert, visited the home of his sister in Watertown last month. He sails for Japan on August 19, where he has extensive interests.

Mr. Warren has great hopes for France, stating that the paper industry there is in fairly good shape. In his opinion, the American paper industry need fear no competition from Japan, as the industries of the two countries have entirely different markets. Paper making, he said, is now one of the great industries of Japan.

The Japanese mills are for the most part equipped with American and European machines, although the Japanese-made machines are becoming more popular.

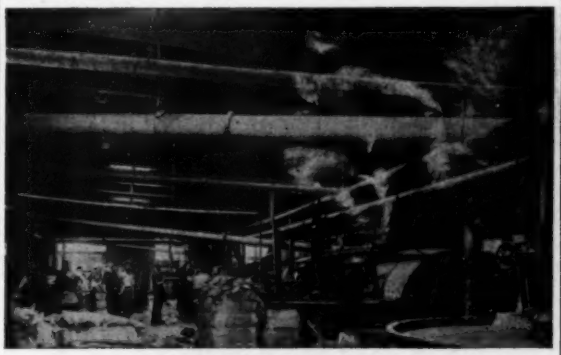
Mr. Warren is technical adviser of the Oji Paper Company of Tokio. He expects to remain three or four months in Japan and will return from there to France.

International Declares Dividend

The International Paper Company has declared a quarterly dividend of 50 cents on its common stock, which places the issue on a $2 per annum basis. The dividend is payable Aug. 15 to stock of record Aug. 4. This is the first dividend paid on the common stock of the International company since 1899. Indications that dividends would be inaugurated some time this year were made last fall, but it was not expected that the dividend would be inaugurated before the end of the year at least.

Earnings of the company have been better, despite lower newsprint prices, due partly to larger returns from investments and power sources.

Standard Turbine Corporation, Scio, New York, announces the appointment of Mr. C. R. Gould as its general manager. Mr. Gould has been identified with turbine manufacture for the past twenty years—most recently with the Kerr Turbine Company for which firm he served in various capacities such as purchasing agent, treasurer, and secretary.



Overhead Lines in paper plant

Overhead Pipe Lines

SUCCESSFUL overhead pipe lines have been made possible with "Michigan" Combination Steel and Wood Pipe. A special steel flange fitting eliminates the ordinary leaks and troubles.

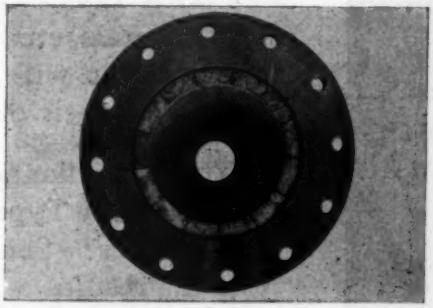
This flange fits over the tenon of the pipe and is used simply as a connection. No metal is exposed to the liquid, which keeps it free from specks of rust to harm the paper.

"Michigan" Combination Steel and Wood Pipe is made of seasoned wood, reinforced with spirally wound steel bands. The steel exterior is protected by two coats of asphaltum, applied hot. There is no chance for corrosion or bursting under pressure.

"Michigan" pipe is stronger, more durable, and has 20% greater carrying capacity than iron pipe.

The number of paper mills using "Michigan" pipe is increasing daily. It is found best for conveying white water, sulphite, ground wood and pure water.

Send us your blueprints and we will gladly furnish estimates on pipe and fittings to suit your requirements.



End view of Special Flange Coupling. Note metal outside

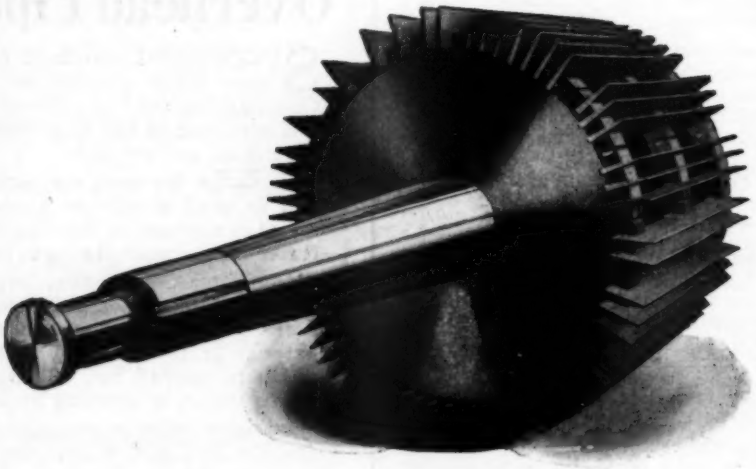
Tell us about your piping problem. If necessary, one of our engineers will gladly call and go over it with you. Remember, every piece of pipe and every bit of work is guaranteed.

MICHIGAN PIPE CO.

Dept. 17 BAY CITY, MICH.

Send Us Your Old Beater Rolls

Mills frequently send us their old rolls of the banded or bandless type, made by other manufacturers, to be rebuilt into our type of Bandless Beater Roll. They would not do this, unless they had some mighty good reasons.



Downingtown Bandless Beater Rolls have crucible steel heads and milled dovetail slots to hold the flybars,—the flybars having dovetail lugs to fill the slots, milled to a perfect fit. Compare this with keys, wedges, bolts and nuts, bands, fusible metals, etc., used to secure flybars in other rolls and you will learn why many concerns are sending us their old rolls.

Why not change your old-fashioned rolls to our Bandless Type and be assured of full wear from flybars? Send us one of your old rolls and note the result.

Catalog on Request

DOWNINGTOWN MANUFACTURING COMPANY
Paper and Pulp Mill Machinery
EAST DOWNINGTOWN, PA., U.S.A.

NEW ENGLAND NEWS

Traffic and Rate Adjustments

With the American Writing Paper Co. reorganization practically an accomplished fact, attention in New England is turned to other matters such as the victory of the New England Paper & Pulp Traffic Association, who have gained the sought for reduction in printing paper rates from New England points to Washington, D. C. The decision makes the base rate to Washington on printing paper 2c over the Baltimore rates, a precedent established a year ago when the I. C. C. ordered newsprint rates from New England to the Capital at 2c over Baltimore.

Other traffic matters which are of current interest to New England paper mills include the efforts of Maine paper mills to sceure an equitable adjustment of the siding rental controversy with the Maine Central R. R. The latter road proposes to assess rentals on sidings installed by it prior to the Congressional statute forbidding the constructing of private sidings by railroad. Their basis of evaluation is considered abnormally high.

The pulpwood reparation case is still before the Maine Supreme Court and the salt rate case from New York State to New England paper mill destinations has still to be passed on by the I. C. C., who have all testimony.

The Circuit Court of Appeals has extended until a date in August the limit of time for filing evidence in the apealed case of the Beacon Oil Co. vs. the International Paper Co. It will be recalled that this long drawn out case involves a contract for oil made between the two companies mentioned, for the I. P. mills in Maine. The strike in the International mills in 1921 and the concomitant business depression reduced their requirements radically and the company refused to accept a large quantity of oil which the Beacon Oil Co., a Boston corporation, attempted to compell them to accept. The first trial resulted in a large verdict for the plaintiff. A retrial by jury cut the damages down to a negligible $2,000 or thereabouts, a victory for the paper company. The plaintiff has now appealed the case to the Circuit Court, all evidence to be based on references to testimony, exhibits and exceptions at the last trial in the Federal Court at Boston.

H. E. McElwain

A second man by the name of McElwain, son of the nonagenarian, who died a few months ago, and equally prominent in Holyoke's paper trade history, died in Denver last month following an operation for abdominal trouble. He was on a trip west to inspect some mining properties, when taken suddenly ill.

For many years Henry E. McElwain was associated with his father, that lately lamented John S. McElwain, in the management of the Linden Paper Co., which later was absorbed by the American Writing Paper Co. Since that merger he had not been actively engaged in business. For two years prior to his father's illness he lived in Boston, returning to Holyoke to be with his parent during his last months. H. E. McElwain was prominent in Holyoke politics. He is survived by four sons and a daughter. He was 70 years of age.

Strike at Wheelwright Plant

On Friday, July 30, some 40 employees of the George W. Wheelwright Paper Co. mill at Leominster, Mass., quit work in protest against the company's point system of wage rating. They were workers in the shipping and finishing rooms. Immediately afterwards an effort was made to secure adherence of all employees to a regular strike and on Monday, August 2nd, a meeting was held at Hawes field, Leominster, attended by most of the workers in the mill. A strike was voted unless the company agreed to abolish the point system and a demand for a 10 per cent increase in wages was also inserted.

The plant was closed Friday, July 30th, and efforts were made to reopen Monday. About 50 employees reported for

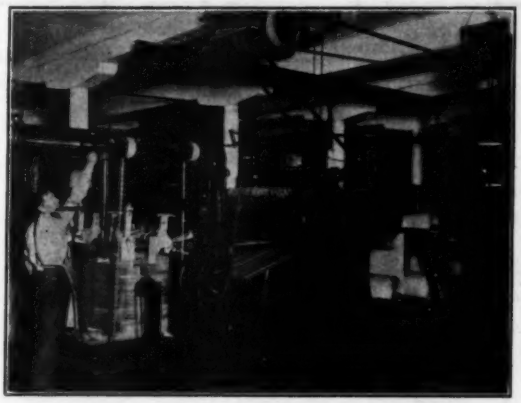


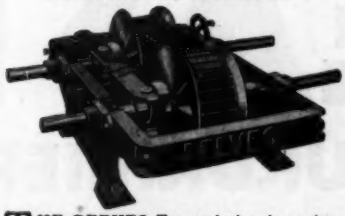
Photo shows a REEVES Transmission driving a paper cutter at the Southworth Company, Mittineague, Mass.

Accurate, Steady Gradations *of* Speeds!

THOUSANDS of paper manufacturers all over the world have eliminated waste in production by installing the REEVES Variable Speed Transmission and getting *accurate* speed control.

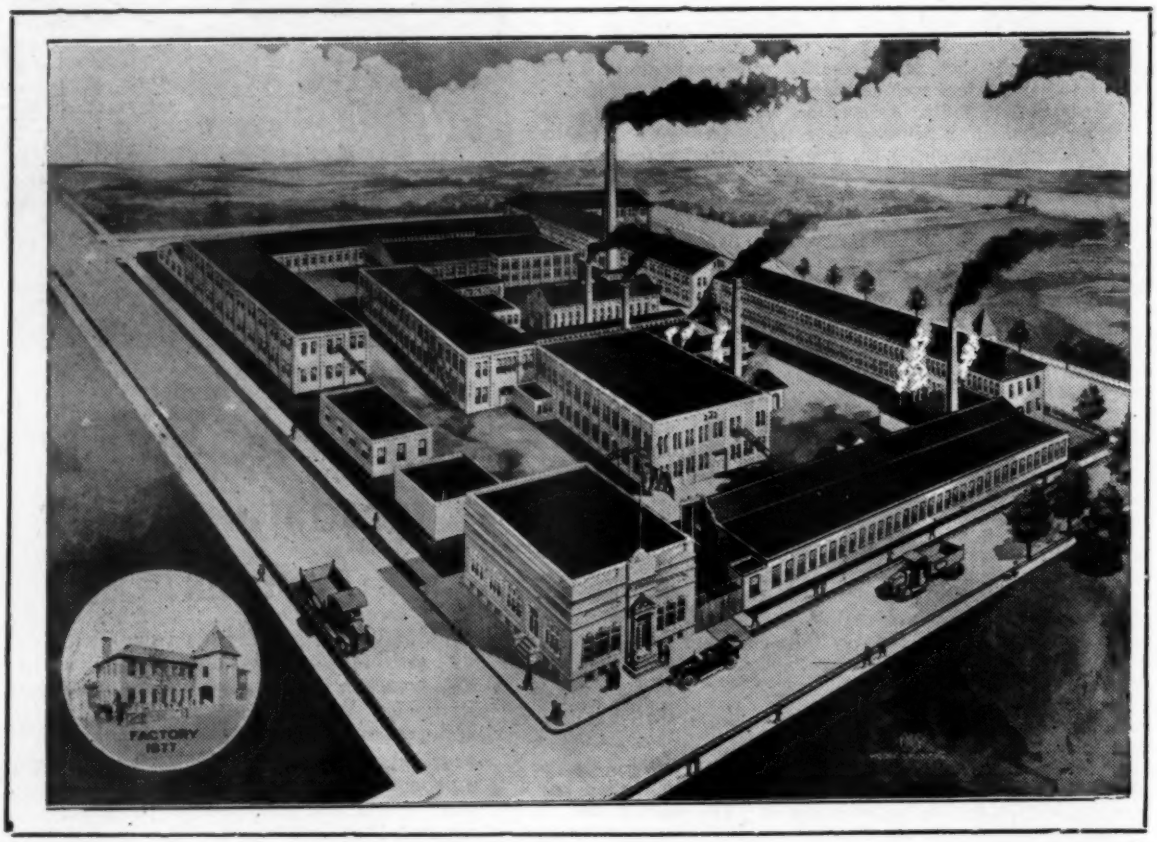
For instance, when a REEVES operates a paper cutter, the feed rolls run at a constant speed, and the speed of the knife is regulated to cut exactly the length of sheet desired. This simple, inexpensive device will run at any speed described between fastest and slowest so you can cut any length sheet at any time. Send for our catalog A-66 which gives full information.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission



This Illustration Visualizes Forty-six Years of Progressive Growth and Unsurpassed Achievements in the Production of

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE MANUFACTURING CO., BELLEVILLE N.J. U.S.A.

work, but pickets soon had these out. The night shift refused to go on and the mill then closed for an indefinite period according to George Wheelwright, Jr., general manager of the company. The subsidiary, Rollstone Paper Co. mill at Fitchburg, has not been affected nor has the company's other plant at Wheelwright, Mass.

Crocker Burbank Co., Ass'n, has accepted plans for a new three-story plant for manufacturing and storage at Fitchburg. The new structure will be erected opposite the No. 4 plant, the Hannah mill, on Westminster St. The building will be three stories in height and its dimensions will be 170 by 120 feet. It will cost about $75,000 to $100,000.

Rice Barton & Fales, of Worcester, Mass., paper mill machinery manufacturers, are very busy on orders for paper mill equipment for northern New England paper mills. They have been buying substantial quantities of pig iron, and according to the local iron trade are in the market at the present time for 1,000 tons of 2X silicon pig iron.

George M. Graves, president of the paper mill supply firm of that name, with offices at 77 Sumner St., Boston, has returned from a six weeks' trip abroad, during which he visited paper stock packers in Great Britain, Holland and Germany, for whom his company is a selling agent in the United States. It will be recalled that the Bulkley Dunton Co., of New York, have become the main American representatives for the Marx Maier Co., of Mannheim, for which the George M. Graves Co. were previously the American representatives. It is now understood, however, there will be a selected list of New England paper mills whose Marx Maier paper stock purchases will continue to be made through the George M. Graves Co., of Boston.

Warren Sales Institute

The S. D. Warren Co. conducted their seventh annual salesmens' camp meeting during the third week of July at the main plant of the company in Cumberland Mills, Maine. Some 50 salesmen from sixteen states were represented at the meeting.

Greetings were extended by Mill Manager Joseph Warren, following which the salesmen were introduced to a wealth of technical data on paper and pulp manufacture by a group of Warren experts led by Benjamin T. Larrabee, superintendent of the sulphite mill, and Nelson R. Davis, superintendent of the paper mills. The discussions were followed by a demonstration on each subject outlined. The Warren Plan was discussed by J. W. Clarke; "Using Our Tools," by E. B. Bowman; "How Paper Is Sold," by W. D. Rogers; "The Coating of Standard Paper," by Fred A. Verrill, superintendent of the coating department; "Safeguarding Standard Papers," by Laurence P. Parkman, head of the inspection department; the laboratory, by E. Sutermeister, chief chemist; and the printing test, by Frank E. Wagner, foreman of the printing test department. A discussion of thin paper following a luncheon at "The Elms" was given by B. S. Van Wyck, and the handling of complaints was outlined by P. E. Hinckley of the Boston office. On Friday, the last day, golf, tennis, swimming, motoring and a shore dinner at Pine Point closed the very pleasant and instructive week which had started on the previous Tuesday.

This "Salesmen's Institute," which has become an annual fixture in the year's program at Cumberland Mills, is conducted by the members of the S. D. Warren Co. above mentioned with the following officials and heads of departments: Roger D. Smith, president; John E. Hyde, E. S. Lipsett, E. L. Johnson, W. B. Gibson, R. F. Potter, George Olmstead, Jr., and W. M. Gordon, advertising manager.

Wet Cargo Concealed in Waste Paper

An amusing though unfortunate experience for a Philadelphia paper stock broker recently enlivened the trade here in Boston. A local paper stock packer shipped 500 tons of waste paper to Philadelphia via the steamer Cretan, to the order of a Philadelphia broker. The stock was understood

Best for engine room cleaning, also

Oakite Service Men, cleaning specialists, are located at

Albany
Allentown, Pa.
*Atlanta, Ga.
Baltimore
*Boston
Bridgeport
*Brooklyn
Buffalo
Camden
Canton, O.
Charlotte, N. C.
*Chicago
*Cincinnati
*Cleveland
*Columbus
*Dallas
*Davenport
*Dayton
*Denver
*Des Moines
*Detroit
Erie
Flint, Mich.
*Grand Rapids
Harrisburg
Hartford
*Indianapolis
Jacksonville, Fla.
*Kansas City
*Los Angeles
Louisville, Ky.
*Milwaukee
*Minneapolis
*Montreal
Newark
New Haven
Newburgh, N.Y.
*New York
*Oakland, Cal.
Philadelphia
*Pittsburgh
*Portland, Ore.
Providence
Reading
*Rochester
Rockford
Rock Island
*San Francisco
*Seattle
*St. Louis
Springfield, Ill.
Syracuse
*Toledo
*Toronto
*Tulsa, Okla.
Utica
*Vancouver, B. C.
Waterloo, Ia.
Williamsport, Pa.
Worcester

*Stocks of Oakite materials are carried in these cities.

Like many other mills, you, too, perhaps, are using Oakite for washing felts, cleaning Fourdrinier wires, removing dirt, oil and tar from wire cylinders, cleaning dandy rolls, screen plates, pipes and mixers. If so, you already know, from actual experience, how THOROUGHLY Oakite cleans.

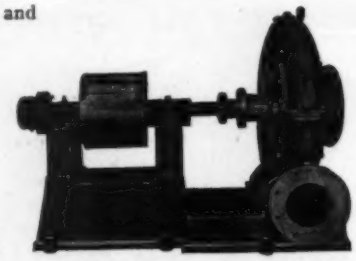
But remember—power plant equipment can be cleaned just as efficiently! And just as quickly and economically. Turbines, condensers, engines, oil coolers, pumps, floors, walls, window—in fact, everything in and about the power plant can be cleaned better the Oakite way.

One of our Oakite service men will gladly demonstrate this to your entire satisfaction. Ask to have him call. No obligation.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods
OAKITE IS MANUFACTURED BY OAKLEY CHEMICAL CO.
16A THAMES ST., NEW YORK, N.Y.

For pumping pulp and thick stock our

Single Suction Open Impeller Split Casing Pumps



are most convenient and advantageous.

We build Centrifugal Pumps exclusively—for all requirements.

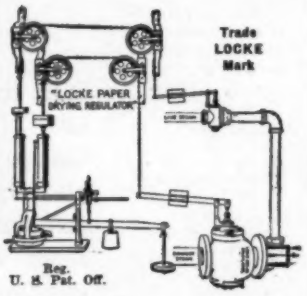
WRITE FOR CATALOG

Lawrence Pump & Engine Co.

P. O. Box 70 LAWRENCE, MASS.

LOCKE Paper Drying Regulator

This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. Is unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any change in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order. Also manufacturers of other steam specialties.



Reg. U. S. Pat. Off.

Locke Regulator Co., 76 North St., Salem, Mass.

"Locke" Regulator Agency, 39 Cortlandt Street, N. Y. C.

Hungerford Filters

for

Clear Water

Hungerford Softening Filters

for

Soft Water

Hungerford & Terry, Inc.

Clayton, N. J.

ALBANY GREASE

For 58 Years

year after year the standard quality of Albany Grease has been rigidly maintained. Use it on your gears, bearings, shafting, pulleys, etc. Feeds gradually—never more than necessary to maintain perfect lubrication. Never drips. Sold in cans and barrels—all consistencies.

Demand Albany Grease—look for the Trade-Mark.

Your dealer can supply you. If not, write us.

ADAM COOK'S SONS

Inc.

6 Varick Street
NEW YORK

Approved for Paper Mill Service

Stanley

Solid Woven Cotton Belting

What *Should* a Belt Do?

Two oil field companies in the Sour Lake District recently compared notes: On a "power" one had used one Stanley Belt for six years. On a similar power the other had used 4 rubber belts a year or 24 belts in 6 years. The Stanley cost only 50c a foot more than rubber belt.

The number of paper mills using Stanley is increasing constantly as its outstanding economy is demonstrated.

Investigate! Write!

Stanley Belting Corporation

320 Broadway
New York

124 Adelaide St., W.
Toronto, Ont.

17 N. Jefferson St.,
Chicago

42A Southwark St.,
S. E. 1.
London, England

to be for a Philadelphia paper board mill. The price was higher than the market then prevailing in Boston. The Cretan was a steamer recently put into a new and rather mysterious Boston-Philadelphia freight service, which was quoting unusually low rates. Normally such movement of waste paper would be impossible owing to high freights and the normal parity between the two markets.

The Boston packer, it is understood, was paid in full, but a few days after the ship sailed it was seized by Boston customs officials, brought to port and found to have an enormous cargo of liquor aboard cleverly concealed by the waste paper. It had taken the wet cargo aboard on "Rum Row." Neither of the waste paper factors was implicated in any way.

Accident to Well Known Chemist

While removing a sample from the trough of an Oliver pulp thickener, Mr. E. Sutermeister, chief chemist at S. D. Warren Paper Company, Cumberland Mills, Maine, was caught in the mixing mechanism. His left arm was broken between the elbow and shoulder in two places with compound fractures, and his lower arm and face bruised and lacerated. He was removed to a hospital in Portland for treatment and is now recovering.

His many friends will be pleased to know that no lasting impairment is feared by the surgeons.

Important additions and new equipment are being built and installed at the mill of the Penobscot Chemical Fiber Co., sulphite and soda pulp manufacturers, at Old Town, Maine. The Morton C. Tuttle Co., of Boston, are the contractors who will do the work of installation. Both soda and sulphite mills are to be affected by the program, which is already well underway. A number of additional and improved screens, a riffler and other machinery are to be installed. An addition is to be built to the mill and an ultimate increased capacity is aimed at as the mill has been operating full time and unable to meet the demand for its pulp.

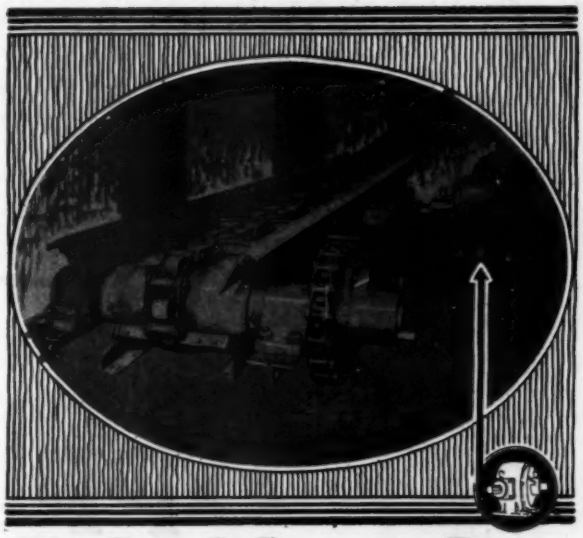
The St. Croix Paper Co., offices at Boston and mill at Woodland, Maine, has segregated the lumber division of their business in a new corporation formed under Massachusetts laws and to be known as the St. Croix Lumber Co. with the same directors as the parent company. The officers include B. M. Randall, president; J. A. Knowles, vice-president; John S. Reed, treasurer, and Charles M. Ready, secretary and treasurer.

The new 350-foot chimney of the S. D. Warren Co. was the subject of an interesting dicussion by K. E. Terry, power plant manager of the Warren Co., before the Kiwanis Club of Westbrook, Maine. Mr. Terry stated that the new chimney is costing the company $85,000 and has been built solely with the aim of eliminating dirt, soot and cinders from the plant to further insure the cleanest and whitest possible printing papers.

It is reported that the Tidewater Paper Board Co., of Norwich, Conn., formerly the Uncos Paper Board Co., has filed notice of an increase in capital stock to provide for general financing and expansion. The increase is said to be $500,000.

Four New England paper mills that have installed powdered coal burning equipment during the post war period are recommending the equipment very highly as conducive to reduction of fuel costs, elimination of smoke, more uniform results and quicker pickup of loads. These mills are the Pejepscot Paper Co., the pioneers who have a different type in each of their two plants, the Fitchburg Paper Co., who are so well satisfied with the initial installation that they are planning further investments in similar equipment; the Forbes Lithograph Co., of Chelsea, Mass., and the Nashua River Paper Co., of East Pepperell, Mass.

In regard to the American Writing Paper Co. adjustment plan, it is understood that the Federal District Courts at Boston and New York will start consideration on October



The Ideal Conveyor Drive

Illustration shows a Ganschow Type "B" driving a LinkBelt Underground Conveyor.

Since the conveyor in all its forms is the heart of production, it is highly important that its drive be the best obtainable.

To be the best it must be impervious to acid, gas, abrasive dust, moisture, or other harmful conditions. It must be conservative of space, because space is always at a premium. It must be able to operate 24 hours a day, stand up under heavy and fluctuating loads, and be capable of delivering more than its rating promises.

The Ganschow Type "B" Angle Drive Speed Transformer meets all needs of a conveyor drive, and operates more efficiently and with less power than any other type of speed reduction.

Ganschow Speed Transformers are made in all types, sizes, and horse powers, to meet every possible driving condition. Catalogue 111 completely sets forth the advantages of planetary speed reduction. Write for your copy.

William Ganschow Company
1015 W. Washington Blvd. Chicago

Plants: CHICAGO and PEORIA

SAN FRANCISCO - - - - The Percy-E. Wright Engineering Co. - - - - - - SEATTLE
BIRMINGHAM - C. B. Davis Engineering Co. SALT LAKE CITY - P. C. Richmond Mchy. Co.
BOSTON - - - - - - - - Allen & Drew PITTSBURGH - - - - H. S. Stockdale
NEW YORK - - - L. C. Bigiow & Co., Inc. PHILADELPHIA - - E. E. Spencer Gears
DETROIT - - - - - F. J. Hadermiller

Ganschow
SPEED TRANSFORMERS
CUT GEARS · FABROIL NOISELESS PINIONS

Appleton

Fourdrinier Wires

Cylinder Wires

Save-All Wires

Washer Wires

In Brass and Phosphor Bronze

"Appleton Wires Are Good Wires"

APPLETON WIRE WORKS, Inc.
Appleton, Wis., U. S. A.

6th of the proposals involved, although Harrington Putnam has been appointed special master in the case and will begin hearings at once.

Though paper exports do not rank high as an item in the foreign trade of this state, the figures from the Department of Commerce show that the first quarter of 1926 saw $893,000 worth of paper exported from Boston.

Canadian Paper Men on Maine Coast

Among the visitors at Maine resorts are Ellwood Wilson of the Laurentide Company of Grand Mere, Quebec, and T. L. Crossley, President of the Industrial Laboratories, Toronto. Mr. Wilson is at the Bay View House, Bay View, and Mr. Crossley is at Ocean Park.

While at Ocean Park, Mr. Crossley will give his illustrated lecture, "Life lessons from a sheet of paper," in connection with the summer program there.

Winfred F. Robertson, tissue paper manufacturer of Hinsdale, N. H., was married on July 22 to Mrs. E. W. Lynch, of Brattleboro.

The Great Northern Paper Co. is conducting an extensive advertising campaign in Maine newspapers in which it preaches the gospel against forest fires.

WISCONSIN NEWS

New Building for K-C Subsidiary

Increase in business has made necessary the erection of a new addition to the plant of the Cellucotton Products Company, of Neenah, a subsidiary of the Kimberly-Clark Company, manufacturing sanitary products.

Construction has already started on a five-story factory and warehouse. The work is being done by C. R. Meyer & Sons Company, of Oshkosh, and will be completed some time this fall. An old knitting factory hitherto used by the Cellucotton Products Company was dismantled to make room for the new plant. Construction is of brick, steel and concrete. The dimensions are 80 by 142 feet.

This is the third large structure erected by the company in scarcely more than a year. The first was a five-story building now used for storage, laboratories, development and experimental work. The second was a five-story plant completed last fall.

Reviving Valley Paper Mill Project

A paper mill project started in 1922 in Menasha and then abandoned for a time, is being revived through the reorganization of the Valley Paper Mills, of Menasha. A new board of directors has been elected and authorized to complete the financial program so that construction can be resumed. The directors also were directed to collect all outstandindg notes and accounts and cancel promotion stock to the amount of $35,000.

The site is just northwest of the city limits of Neenah. Only the foundation of the mill was built when financial difficulties caused an interruption of the project. The expenditures for the site and foundation amounted to $70,000. About $350,000 of stock is subscribed and there is about $120,000 outstanding in notes, according to a statement from the board to the directors. H. H. Held, of Neenah, is president of the company.

Final approval of the petition of the Northern Electric Company to build two dams on the Menominee River at White Rapids was expected of the Wisconsin Railroad Commission which several weeks ago denied a permission when the application of the company did not comply with the so-called recapture clause of the Wisconsin statutes. The new application includes this and the commission was scheduled to conduct a hearing in the matter on August 5 at Madison. The hydro-

Pyrometry In Paper Making

THE roughest usage is accorded those Bristol Pyrometers which serve Pulp and Paper Plants. They are utilized on the Burners where Sulphur is burned to produce the SO_2 needed in making Sulphite Liquor; and in order to burn out the impurities and recover the Caustic.

Bristol's High Resistance Pyrometers combine a greater sensitiveness to temperature changes with the ruggedness of the double pivot jewel-bearing mounted coil—the coil which distinguished the first practical thermo-electric pyrometer (Bristol's) to be used in industry.

A Bristol's Recording Pyrometer therefore has a reputation for "standing up" and maintaining accuracy of charted record under the most adverse conditions.

The Bristol Company Waterbury, Connecticut

FOR 36 YEARS MAKERS OF BRISTOL'S RECORDING INSTRUMENTS

You don't have to check Hytor capacity—we do it for you

View, showing a Nash Hytor Vacuum Pump on suction rolls in the plant of the Mead Pulp and Paper Company, Chillicothe, Ohio.

When you buy a Nash Hytor Vacuum Pump you can be sure of its dependability in everyday service. It will never fail to develop the capacity for which it is rated. For, before leaving the factory, every Nash Pump is given a final critical test. It must demonstrate, by actual performance, it will satisfactorily give the service that is expected of it.

Hytors are built to make good and they do.

NASH ENGINEERING COMPANY

So. Norwalk Connecticut

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Sq., Boston, Mass.

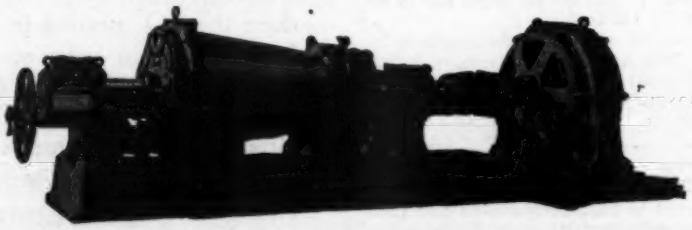
Western Representative
Mr. T. H. Savery, Jr., Room 1524 Republic Bldg., Chicago, Ill.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

A JORDAN ENGINE *for* EVERY PURPOSE

Direct Connected Motor Driven Jordans



Six Sizes:—
Baby Jordan
Pony Monarch
Monarch
Mammoth, Jr.
Mammoth
Bull Dog

DURING the past two years, over 80% of our Jordan output has been of the Direct Connected type.

Our Type "D" Jordans are particularly adapted to direct motor drive because of their sturdy construction and the design of our couplings and motor bases permits ample adjustment to insure full wear of Jordan plug and shell knives.

Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plug, so often found in Belt Driven units, is avoided.

Specifications and Prices Furnished on Request

THE NOBLE & WOOD MACHINE CO. Hoosick Falls, N. Y.

For list of our entire products, see page 387 in the 1925 Paper and Pulp Mill Catalogue

electric power project will be used to transmit power to the Northern Paper Mills at Green Bay.

Investigating Stream Pollution

An exhaustive survey is being made of the Fox River near Appleton and Kaukauna by Wisconsin officials in co-operation with paper mill officials in an effort to solve the stream pollution problem. The survey is being made jointly by the Wisconsin State Board of Health and the Wisconsin Conservation Commission. The state has appropriated $10,000 for this work which will take practically all summer.

Results will be tabulated and if it is found that paper mill waste is poisoning the fish, paper mills will stand ready to remedy the situation. The mills have already spent about $150,000 in an effort to solve the pollution problem and are ready to go even farther.

With paper mills at their front door, printing plants in Appleton are taking advantage of the saving in transportation costs, and a number of them have gone into the publishing business. A dozen or more magazines are being published here with a monthly circulation of about 200,000 copies.

Fox River Valley paper mills are busy planning for their annual picnics. The Kimberly-Clark Company, of Neenah, Appleton and Kimberly, and the Combined Locks Paper Company, Appleton, usually hold theirs on Labor day.

A small fire interrupted production at the Little Rapids Pulp Company, of Little Rapids, for a few days last month. A hot box in one of the main drives started a blaze in a paper machine. Help in extinguishing the blaze was obtained from Kaukauna and Wrightstown.

The Great Western Paper Company, of Ladysmith, has been given a contract for making the paper to be used in the Chicago telephone directory. The job will require about six months.

Fox River Valley paper mills will again have a large exhibit in the Wisconsin Products Exposition at the Wisconsin State Fair the last few days in August and the first few days of September. The exposition is sponsored by the Wisconsin Manufacturers' Association. The Chamber of Commerce of Appleton has induced a number of mills in Appleton and vicinity to group their displays in one section of the building. The Kimberly-Clark Company, of Neenah, will have a large exhibit of its own near the Appleton section.

Vandals recently broke into the plant of the newly established Esco Paper Company, of Peshtigo, Wis., and damaged a number of the machine parts. An investigation is being made of the affair. The company located here a short time ago at the invitation of the Peshtigo business men and were given the old high school building for a plant.

In an inter-mill safety contest between the Nekoosa and Port Edwards mills of the Nekoosa-Edwards Paper Company for the first six months of the year, the Nekoosa mill won the prize for having the best safety record. Of the $1,600 prize money, $800 was divided among the 400 employees of that mill. The other $800 was divided among the departments of both mills that operated without accidents during the half year.

Raymond Hoh, an employee of the Fox River Paper Company, Appleton, had to have three fingers amputated from his right hand as a result of an accident in the mill. A chain block on which he was working broke and he was injured by falling on his hands.

Construction of a big warehouse has been started by the Bergstrom Paper Company of Neenah just south of its principal mill. It will be five stories high and will be of concrete, steel and brick construction. The dimensions will be 80 by 150 feet. About 60,000 square feet of floor space will

Adjusting the Clamps and Rods

Too much time cannot be spent in removing the stretch, which usually amounts to about ¼ inch to the running foot. This point is most important for the proper installation of the endless belt.

You really owe something to a good belt

You can double the life of a good belt if it is installed properly. With the aid of this new booklet, "There's money in this for You", you can prolong the life of your good belts indefinitely.

Your men can follow these simple instructions and keep all your belts in perfect repair. And the work will be done just as Schieren workmen do it.

We'll be glad to send you this booklet free of all obligations. All we ask is that you lend an ear to our story the next time you need a good belt.

Chas. A. Schieren Company

TANNERS

BELT MANUFACTURERS

22 FERRY STREET, NEW YORK

80 YEARS'—

Experience in Making Dryer Felts

FITCHBURG Cotton Dryer Felts have conformed to the highest standards of quality and workmanship for over eighty years. This is one reason why today they are used so extensively.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

¶ Fine faced felts for fine papers. For coarse papers, use "Triune" three-ply Felts —**they're dependable.**

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

LOCKPORT Felts

EXCLUSIVE MAKERS OF

Paper Makers' Felts

Have You Run Them?
If Not, Why Not?

Are You Interested in Accurate Running Felts?

Give Us a Trial
Get Authentic Information
Ask the Men Who Run Them

Yours for service

LOCKPORT FELT CO., Newfane, N. Y.

"DRY PAPER EFFICIENTLY

The Fulton Dryer Drainage System

—Increased production
—Decreased steam pressure on the dryers
—Reduced steam cost for drying

Better Sheet—Better Finish—Less Shrinkage

—and cockling prevented by drying with graduated temperature — Less pressure or vacuum on paper machine dryers.

We will gladly refer you to mills using the Fulton System and making the same grade of paper as you. They will tell you their experience with the Fulton System.

U. S. Patents Dec. 10, 1919, and June 7, 1921. Canadian Patents July 6, 1920, also patents pending.

Fulton Engineering Co.

MIDDLETOWN, OHIO

The Beveridge Supply Co., Ltd., 628 St. Paul St. W., Montreal, Canadian Representatives

be provided. The building, which will be used principally for storage purposes, will be completed early in autumn.

A. N. Strange, president of the Wolf River Paper & Fibre Company, of Shawano, is again able to be about his duties after confinement with internal injuries suffered in an automobile accident.

The Nekoosa-Edwards Paper Company, of Nekoosa and Port Edwards, has been very active this season in the interests of conservation. Its hatchery supplied 175,000 rainbow trout raised to fingerling size for the streams of Wood County.

A big power plant is being erected in Green Bay by the Wisconsin Public Service Corporation from which paper mills in Green Bay and De Pere will benefit. Foundations for the building, boilers of the steam plant, turbines and intake tunnel for water have been completed and steel is being raised for the superstructure. The first section will house two 10,000 kilowatt electric units.

The Oneida Power Company, subsidiary of the Consolidated Water Power & Paper Company, of Wisconsin Rapids, lost a damage suit in court at Stevens Point whereby John and Julia Barta, of Eau Plaine, will be repaid for damage done to their land by water overflow. The jury found that thirty acres of the plaintiffs' land had been flooded and fixed the amount at $50 an acre. Because of this flooding the remaining 64 acres was depreciated at the rate of $25 an acre, the jury found.

McGillan-Asmuth Paper Mills, of Menasha, Wis., have filed an amendment to their articles of incorporation with Fred R. Zimmermann, secretary of state, to change the company's name to Wisconsin Tissue Mills.

Purchase of the Nash Service Company garage on North Church street, Neenah, has been made by the Bergstrom Paper Company, of that city.

A three-day conference of sales representatives of the Tuttle Press Company, of Appleton, was held last month. Sales problems and possibilities for the coming year were discussed. Seven of the company's foreign representatives were present. The conference was followed by the company's annual picnic.

Four steamers laden with wood pulp shipped from Sweden docked in Wisconsin ports of Lake Michigan last month and unloaded their supply for Badger paper mills. These were the first foreign shipments of pulp ever made to Wisconsin solely by waterway.

On July 1 the Janesville Paper & Supply Company, of Janesville, moved from that city to Madison, where it has taken over a fireproof building. The name has been changed to Dizon Wholesale Paper Supply Co.

Articles of incorporation establishing the Imperial Paper Products Company, of Menasha, have been filed in the office of the secretary of state. The purposes of the corporation are to manufacture and sell embossed glassine paper and other articles made from pulp. The company is capitalized at $10,000, and the incorporators are George P. Pierce, H. E. Landgraf and T. E. McGillan, Menasha.

A. M. Dohr, formerly of the clerical staff of the Peshtigo Paper Company, Peshtigo, has been promoted to sales representative for the company.

Two weddings of prominence in paper mill circles occurred in the Fox River Valley recently. John Babcock, Stevens Point, son of Charles Babcock, president of the Wisconsin River Pulp & Paper Company, Stevens Point, with offices in Neenah, married Miss Marion Harmon, of Oshkosh. Theodore Markley Gilbert, Neenah, treasurer of the Gilbert Paper Co., Menasha, married Miss Ruth Dickinson, of Appleton.

ROOTS

BLOWERS
for CONVEYING

Roots Blowers are ideal for pneumatic conveying of rags, wood chips, or any loose material.

There are many installations that are giving uninterrupted service at surprisingly low cost for power and for maintenance.

Ask us for complete information

"Standard Since 1859"

The P.H.& F.M. ROOTS CO.
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CONNERSVILLE, IND.
Chicago Office 130 S. Michigan Ave.
New York Office Room 800-120 Liberty St.

Ham Feltz sez:

Life is sure fast these days—and gittin' faster every minute. Used to be that a trip on the Main St. car line was a wild and reckless joy-ride. Now the street cars block the traffic. Same with papermaking. The speed-devil is makin' a hard life and a short one for a felt that ain't got the stuff. But I ain't heard of Hamilton A-plate press felts weakening any under the strain? Have you?

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They increase production, save labor and decrease wastage on Calenders. Write for literature. Special Machinery—Couplings—Gears.

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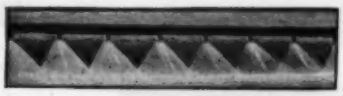

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Built in sizes 1 inch to 48 inches

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Claflin makes continuous beating possible. Unequalled for Rope Manilla, Leather Board, Sulphite Screenings, Wall Board, Kraft Paper and Waste from Pulp Stones, Chipboard.

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Write for catalogue *Built in three sizes*

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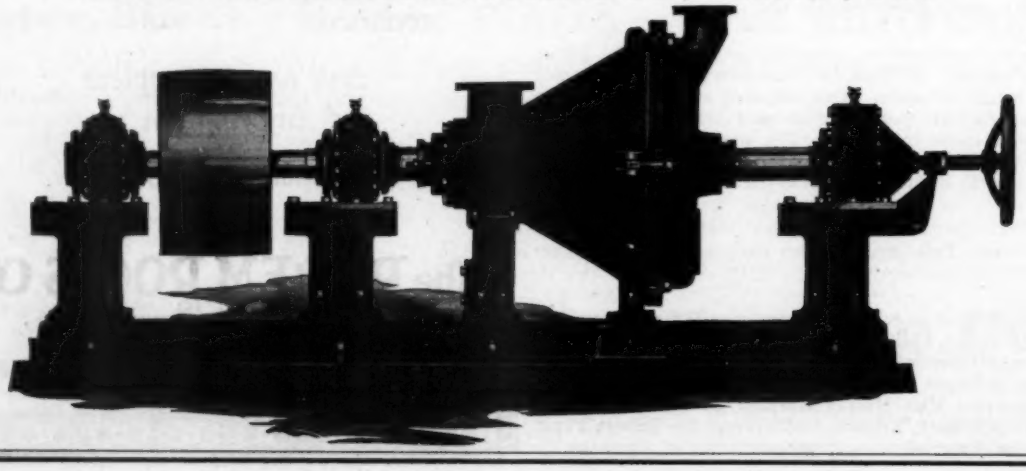

PACIFIC COAST NEWS

Hawley Company Plans Public Financing

Plans for public financing are under way in the Hawley Pulp and Paper Company of Oregon City, Oregon, one of the largest paper manufacturing plants on the Pacific coast. The preliminary step to that end was taken late in July, when the formation of a corporation was begun by the Hawley Pulp and Paper Company of Delaware.

Heretofore the shares in the mills have been very closely held by a small group of owners, but under the new arrangement part of the securities to be offered will carry a common-stock interest in the company. Further details are being withheld until plans are entirely arranged. The manangement of the corporation will remain as it is at present, with W. P. Hawley as president, Willard P. Hawley, Jr., vice-president and general manager, and Theodore Osmund, secretary-treasurer.

W. P. Hawley organized the present Hawley Pulp and Paper Company eighteen years ago with a small original investment. From that time it has grown to its present magnitude through its earnings. Located at Oregon City, only 15 miles from Portland, it is unusually well situated in respect to transportation, being on the main line of the Southern Pacific Railroad with ample warehouse and side-trackage joining the Southern Pacific right-of-way. The plant is connected with the Northern Pacific, Great Northern and Union Pacific Railroads at Portland by the standard gauge line of the Portland Electric and Power Company as well as being furnished with trackage for each individual unit of the plant. Water transportation is available on the Willamette river, the largest tributary of the Columbia, and is facilitated by a dock located adjacent to the mill.

Timber lands amounting to over 23,000 acres and located in Clatsop and Tillamook counties are owned by the company. Original water power rights on the Willamette river are owned by the company also. In addition it has favorable long-term leases for additional water power, more than sufficient to furnish all the power necessary for the production of the annual pulp requirements of the plant.

The company manufactures manilla and sulphite wrapping paper, tissue papers, bag paper, newsprint, and fruit wrappers as well as manufacturing all the crepe towel paper that is made on the Pacific coast. Modern paper oiling equipment for the oiling of fruit wrappers and a complete printing and stereotyping department is included in the plant equipment.

The raw materials for these finished products are prepared in mechanical and chemical mills owned and operated by the company. The proceeds of the public financing program which is now in preparation will go to provide for additional construction and improvements which will greatly increase the capacity of the plant. One of the foremost paper mill engineers in the country, V. D. Simons, will supervise the construction work.

Crown Willamette Stock on N. Y. Exchange

According to a recent announcement, the New York Stock Exchange has authorized the listing of the Crown Willamette Paper Co.'s 149,000 shares of first preferred stock of no par value and voting trust certificates for 149,000 shares of common stock of no par value on a basis of voting trust certificates for one share of common stock and for each share of preferred stock represented by a full paid first preferred stock allotment certificates.

A. J. Lewthaite, formerly of Portland, Ore., is now executive vice-president of the Crown Willamette Paper Co., with headquarters in San Francisco.

Construction of St. Helens Mill Progressing

Construction on the new St. Helens Pulp and Paper mill at St. Helens, Ore., is rapidly in progress and it is believed that operations will begin about the first of the year. The contract for electrical equipment has been let and a corps of

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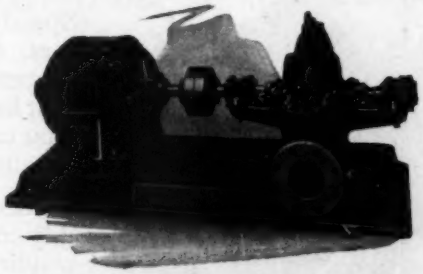

Here is a "Chicago" single stage horizontal pump. It is known as Type "D." Used for House, Booster, Circulating and Fire Duties. Designed to handle any kind of liquid or semi-liquid. Sizes up to 6". Capacities up to 2000 G.P.M. Heads up to 215 pounds. Ask for Bulletin 101.

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Literature Gladly Furnished Upon Request

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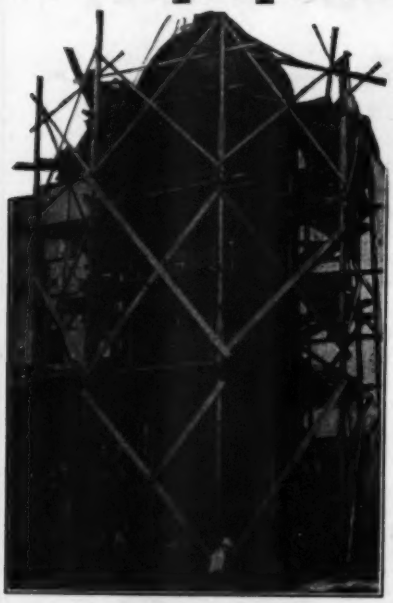

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Remember, we will design and build sturdily constructed equipment to meet the exact conditions of the mill.

Back of every piece of Manitowoc equipment are long years of manufacturing experience, experienced engineering organization, skilled workmen, and complete facilities.

Write for our folder covering paper mill equipment

Manitowoc Engineering Works
Manitowoc, Wisconsin

MANITOWOC

35 to 40 workers have been added to the 250 already employed in the construction work.

More than half of the machinery has been delivered and is being erected while the remainder is on the way. A concrete fireroom is being built and structural steel workers are setting up steel in the boiler room and in the recovery room. The interior of the main building has been finished.

An interesting piece of construction is the 320-foot concrete smokestack being built for the plant. It is 35 feet in diameter and rises 150 feet above the other buildings in the new mill group. It is a landmark for miles up and down the Columbia river.

While no definite plans have been submitted, it is very likely that a merger of the Oregon Pulp & Paper Co. of Salem with paper mills in Vancouver, Wash., and Los Angeles will take place, according to a recent report. All are controlled by C. W. Leadbetter, of Portland, it is stated. In connection with the merger, it is said, the directors are considering combining with the three plants the Western Paper Converting Co. of Salem. This concern now manufactures into finished products, part of the output of the Oregon Pulp & Paper Co.

Begin Construction Soon on Longview Mill

The Longview Fiber Company is to begin construction immediately on a $2,500,000 paper mill in Longview, Washington, according to a recent announcement of R. A. Long, head of the Long Bell Lumber Company and founder of Longview. It is expected that the plant will be completed and ready for operation by September 1, 1927. Plans are that from 300 to 400 men and women will be employed in the plant with an annual payroll of about $650,000. The capacity of the mill will be 100 tons of pulp and 100 tons of pulp products daily.

A 180-acre tract of riverfront property east of the east fir unit of the Long Bell mills has been selected as the site of the new plant. The proposed plant is to be the first unit of the paper mills and plans are to expand as time and conditions permit. Months have been spent in the testing of fir wood prior to the decision to erect a plant in Longview. The exceptional climate, splendid shipping facilities, abundant supply of raw materials and ideal living conditions were contributing factors in the selection of Longview over a number of other considered locations, Mr. Long stated.

The company is composed of a number of men who are prominent in the pulp industry. They include: M. A. Wertheimer, president of the American Lakes Paper Co., of Chicago, and of the Thilmany Pulp & Paper Co., of Kaukauna, Wis.; D. C. Everst, president of the Ontanagan Fiber Company, Ontanagan, Mich., and secretary and general manager of the Marathon Paper Mills Company of Rothschild, Wis.; H. L. Wollenberg, formerly president of a large oil refining company in the East; A. K. Salz, president of Kullman, Satz & Co., San Francisco, and Robert S. Wertheimer, mechanical engineer of the Thilmany Pulp & Paper Co., Kaukauna, Wis.

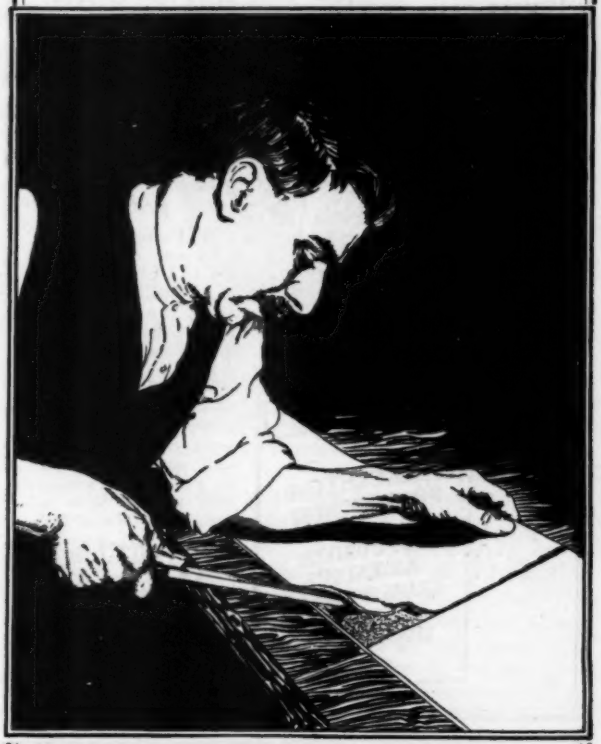
Plans for Astoria Mill Being Considered

Proposed buildings for the Young's River Pulp and Paper Mills adjoining the plant of the Young's Bay Lumber Company at Astoria, Ore., are now being planned. Surveying has begun on running lines and the sites for ten or a dozen buildings are being determined. C. B. Gerton, chief engineer of the Delta Engineering Company is in charge and C. B. Vaughn, of Portland, consulting engineer of the project, is also on the job.

The buildings will be built in a U formation and will include a sawmill, a wood factory for cutting timber into chips, a storage house for the chips, a digester, refining mills and power plant operated by hog fuel. The plant will develop 8,000 horsepower, according to engineers.

Announcement was made in Tacoma, Wash., July 23rd, of plans for the organization of the Olympia Pulp & Paper Co.; capital stock of $750,000. Tentative plans have slated the following officials: Millard Lemon, of the Security Bank & Trust

Enter the edge about 2½ inches back from the point so it can be gradually opened without tearing.



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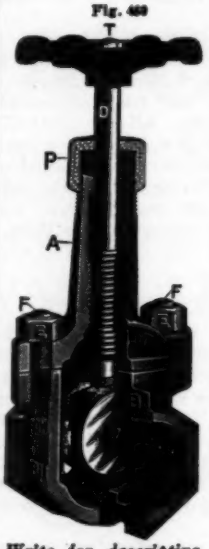

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Fig. 106 Screwed Jenkins Standard Bronze Globe Valve

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Company, president; James Allen, of the Allen Engineering Company, vice-president; C. J. Lord, of the Capital National Bank, treasurer; J. C. Sams, of the Sams & Peters Co., secretary.

BRITISH CORRESPONDENCE

Current Conditions

The British paper industry is suffering severely from the effects of the prolonged coal stoppage. Some mills are restricting output in an effort to conserve coal supplies; others are risking a full stoppage later by working at usual pressure; while some have obtained supplies of inferior foreign coal. Still other mills have changed over to oil or wood fuel. Production costs have increased considerably and some mills are closed down altogether owing to the heavy losses incurred.

It is not expected that, even though the coal dispute be settled in the near future, that the paper industry will recover for many months. There is little demand at the present time except for wrapping paper for soft foodstuffs which have a large summer sale. This has previously been a foreign product, but a British mill is being equipped at the present time for the production of vegetable parchment, which is the class of paper mostly used.

The coal trouble has made it impossible to judge fairly the results of the wrapping paper duty; but it is noticeable that the wrapping mills have been more particularly hard hit by the coal stoppage than some of the others. As a result of this, foreign imports still continue, and higher prices are being paid by consumers.

Figures in the Board of Trade returns give some idea of the effect of the prolonged coal strike. In May of this year, exports of paper and board totaled 353,164 cwts. against 454,787 cwts. for the corresponding month last year. For the same reason as it is impossible to judge the results of the wrapping paper duty, it is also impossible to ascertain truly the effects of the Canadian competition in the Australian newsprint market; but it may be due to a combination of both causes that the greater part of our export decreases are shown in our shipments to Australia.

There was a slight increase of paper making raw materials in May. Wood pulp prices are reported to be firm and unaltered, and mechanical wood pulp is still getting a good sale. The esparto business, however, is slow and unsteady, although ample supplies are available. One large group of mills has acquired an interest in one of the largest esparto grass importing houses, with a view to the co-ordination of the purchase and supply of this material.

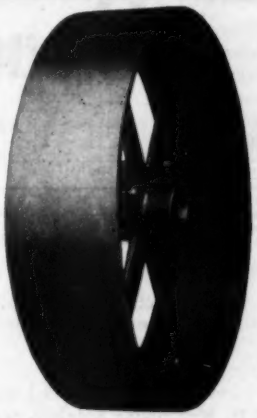
Continental mills still supply by far the biggest proportion of imported newsprint, Norway heading the list with 28½ per cent, followed closely by Finland and Sweden. Empire mills send only a little over 15 per cent between them, and little hope is entertained for altering this condition of affairs owing to the fact that the United States takes such a large proportion of the Canadian and Newfoundland output.

The Anglo Canadian Pulp and Paper Mills, Ltd., have this month offered 62½ per cent 30-year guaranteed mortgage debentures to the extent of £1,800,000, in connection with a tract of land which has recently been acquired in the province of Quebec. The territory consists of 2,200 square miles of timber land containing enough wood to make 5,300,000 tons of newsprint, and is estimated to ensure a full forty-five years' supply for the projected mill, a site of over seventy acres for which has been purchased by the company at Quebec, with a deep-water frontage to the St. Lawrence River, which assures adequate transport facilities.

Lord Rothermere's Statement

In an article in The Daily Mail explaining the issue, Lord Rothermere says:

"Those in close touch with the pulp and paper industry have been aware for some time past that it is within measurable distance of a crisis. They know that pulpwood is being consumed at a rate much beyond that of natural replacement



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There is a Wood's dealer near you who is competent and equipped to handle your power transmission problems—and he carries a complete stock for your power transmission needs. When you next order, call him up.

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1—502 H. P. B. & W. Stirling, ASME Code, 160 lbs. pressure, Murphy Stoker, soot blower and superheater.

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2—9 ft. x 30 ft. vertical riveted acid brick lined.

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One 113" Fourdrinier tissue machine.
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Pusey and Jones design.
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106" nine roll. 72" nine roll. 62" seven roll. 64" seven and nine roll.
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124" Warren. 72" Moore & White four drum. 82"-72" Langston.
MARSHALL DRIVE
Complete Pusey & Jones and Rice, Barton & Fales for paper machines.
SHEET CUTTERS
110" Hamblet. 110" Horne. 70"-54" Moore & White. 60"-52"-48" Hamblets.
REAM CUTTERS
54" Holyoke Seybold. One 44". One 38". Twentieth Century Seybold.
LAYBOYS
102". Two 72". Three 52" Erie single. One 72", two 60" Moore & White.
SUPER CALENDERS
56" seven roll Holyoke. Four 66" Holyoke. One 62", one 60", one 45" Norwood.
SUCTION ROLLS
104"-136" Millspaugh with Connersville pumps.
STUFF PUMPS
Six Deane triplex 12x12. One Deane triplex 9x8. Four 5" Post.
BEATERS
Two Jones 65x57. One Holyoke 60x60. Three Horne 36x36.
JORDANS
One large Horne. Two N. & W. Monarch. One Jones Standard.
RAG CUTTERS
Taylor Stiles No. 11. One No. 2 Daniels.
WASHER
Jones 65x57 equipped with four cylinder washers.
TWO NO. 2 LANNOYE PULPERS.
Variable speed steam engine, ERIE BALL, 12x12x14.
Revolvator.
Three 72" Sandy Hill wet machines.
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"The time when this may be expected has been brought very much nearer, by the extremely rapid development of the manufacture of artificial silk and artificial wool, whose raw material is identically the same pulpwood as that from which newsprint is made.

"Newspapers are multiplying fast in every civilized country. The circulations of some of them have reached figures beyond the wildest conjectures of even a few years ago. At the same time, the size of individual newspapers has much increased. In the United States, especially, Sunday editions are nearing the limit of human capacity to handle them. Two hundred pages is quite a usual size, representing a weight of over 2½ pounds of newsprint in a single copy. Daily editions contain from thirty-six to sixty pages.

"In 1925, the United States consumed 2,980,000 tons of newsprint, about one-half of which was manufactured in Canada. British consumption was 650,000 tons, of which total the newspapers under my control took one-fourth."

Upon the return of Bart Thane, representative of the Alaska Gatineau Gold Mining Co., and B. T. McBain, general manager of the Columbia River Paper Mills from their visit to Alaska in company with others interested in the development of the wood pulp industry there, it is reported that they favor a site near Juneau for the location of a pulp mill as the best of nine which were studied.

WANTED—Engineer and Draftsman to serve as Head Draftsman in Engineering Department, serving paper mills, hydro electric plants and bag factories. A man with paper mill experience preferred. Must be willing to work on the board. Good opportunity for promotion. References required. Please send details of experience with application. Address Box 103, The Paper Industry.

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Pioneers in Paper Making

BELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

America's Second Paper Mill

The inception of the second American Paper Mill dates from September 13, 1728, when the General Court of Massachusetts passed "an Act for the Encouragement of Paper Making" granting to the promoters, Daniel Henchman, Gillam Phillips, Benjamin Faneuil, Thomas Hancock and Henry Dering the sole privilege of making paper in the Province for a term of ten years. The mill was set up in the town of Milton on the Neponset River.

It is interesting to note that Faneuil was the father of Peter for whom Faneuil Hall is named, and that Hancock was an uncle of the famous John Hancock.

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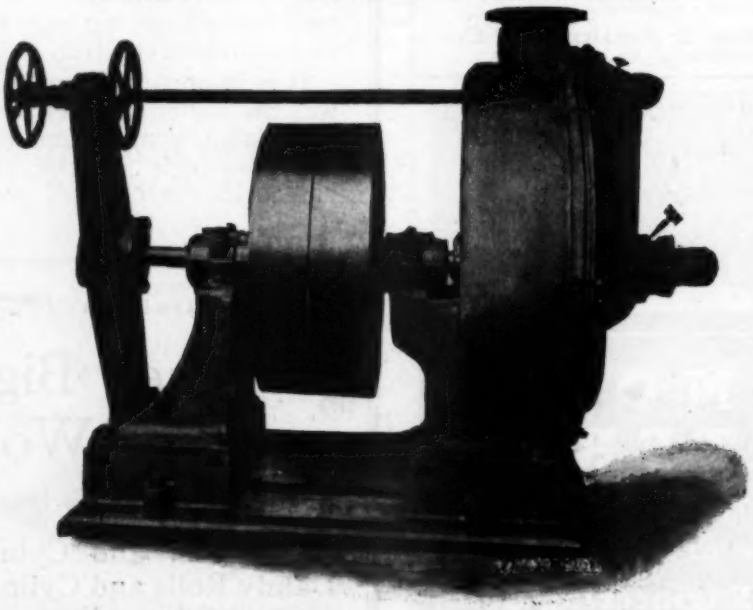

by reducing your groundwood sulphite and sulphate Tailings to good Pulp

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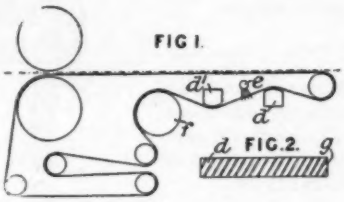
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Wet Presses in Paper Machines

IN CLEANSING the wet felts of paper machines, guide members (d) and (d^1), having inclined ribs (g) (as shown in figure 2) produce a lateral distortion of the felt, thereby opening the pores and allowing the impurities to be washed out by water from a spray pipe (e). The water in excess is removed by a suction cylinder (f). British Patent No. 251,600.



Liquid Treatment and Pressing of Pulp

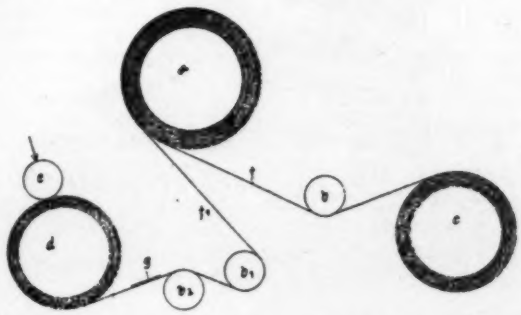
WOOD pulp is impregnated with a liquid, for example an alkali in the preparation of viscose, and the excess liquor is removed in a continuous process. The pulp travels on an endless band conveyor successively through a tank containing the liquid, and a press. Drying its passage through the tank the pulp is held on the conveyor by a second endless band above it. The upper plate of the press is lowered at regular intervals and during its downward travel the motion of the conveyor automatically ceases. British Patent No. 247,307.

Coating Paper Webs with Metallic Foil, Etc.

A PROCESS for coating paper webs with metallic foil, cork and the like is patented in German Patent, No. 429,279.

The paper web is first rolled up and then carried to a gluing machine, where it receives a continuous coating of the adhesive preparation. Here the paper web is also combined with insulating strips which prevent the dripping off of the adhesive preparation on to the under side of the web, and then the web is rolled up again.

The paper which is prepared in this manner, which is well



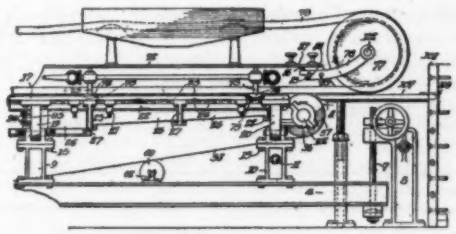
known, is shown as (a) in the accompanying figure. This represents an unwinding machine and the roll of paper (a) is thus unwound. The roll (a) is unrolled in such a manner that the inner side of the web (f'), which is coated with the adhesive, is carried over a guide roller (b') and the insulating web (f) is led over a guide roller (b). The insulating web is then rolled up on the roll (c) and is then ready to be used over again in the preliminary stage of the process.

The paper web (f'), provided with an adhesive coating, runs with the glued side underneath the guide roller (b') over the guide roller (b^2) which at the same time acts as a distributor of the adhesive. The roll (d) is located near the guide roller (b^2) and the distance separating the two is sufficient for the locating of the device which feeds the metallic foil or the like on to the paper web. The metallic foil, etc., are not placed on the glued side of the paper but on the top and dry side. But the paper web (f') which is rolled up in the roll (d) is provided with a glued side and in rolling, the coating material is thus intimately combined with the paper web. Another roller is arranged over the roll (d) and this serves to exert an equal pressure on all parts of the paper web that is being rolled up. German Patent, No. 429,279.

Paper Making Machine

THE illustration shows an improved type of fourdrinier machine as patented in United States Patent, No. 1,583,130.

The improvement consists of a combination of supporting stands with a roller carrying frame which is bolted to these



stands in such a manner that it can be easily removed. Pivot pins extend lengthwise from this side of the machine to which the frame is bolted to the other side of the machine frame, the roller carrying frame being hingedly mounted on these pivot pins.

Absorption of Sodium Hydroxide by Sulphate Cellulose

A STUDY has been made of the absorption of sodium hydroxide from its solution and also from black liquor by sulphate pulp. The amount of alkali thus absorbed from its solutions by sulphate cellulose, such as kraft pulp and bleachable pulp, was determined by the indirect process. According to this method two grams of the cellulose were shaken with one hundred cubic centimeters of the solution and fifty cubic centimeters were then titrated with acid.

When the concentration of the sodium hydroxide was three and a half grams per hundred cubic centimeters, absorption was complete in from two to sixty minutes, according to the conditions of shaking, and it diminished with rising temperature between 18 degrees C and 50 degrees C. At a temperature of 75 degrees C acidic substances were formed by oxidation of the cellulose by atmospheric oxygen. With increasing concentration of sodium hydroxide from zero to seven per cent, the absorption curve was bent first towards the concentration axis and then away from it.

It is probable that a strongly hydrolyzed compound of sodium hydroxide and cellulose is formed. The absorption is reversible and the equilibrium may be reached from either side. No absorption of sodium chloride or sodium carbonate could be detected, but the addition of the former to sodium hydroxide materially increases the absorption of the latter.

The absorption of sodium hydroxide from solutions of sodium sulphide, which is nearly completely hydrolyzed in dilute solution, and from black liquor from sulphate cellulose

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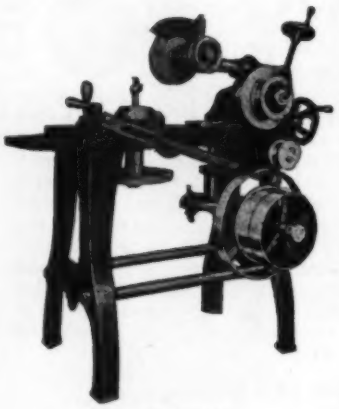

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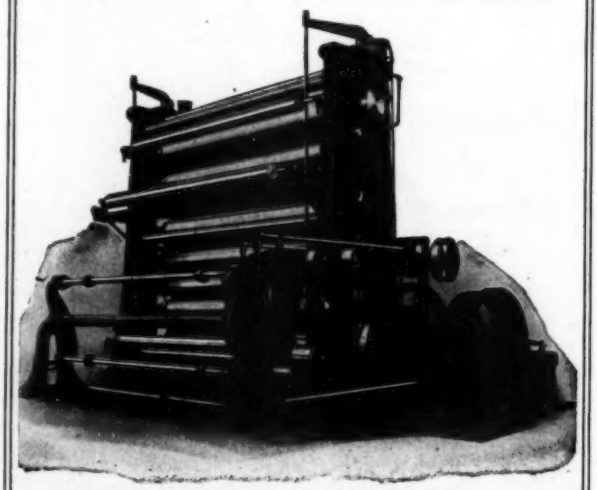

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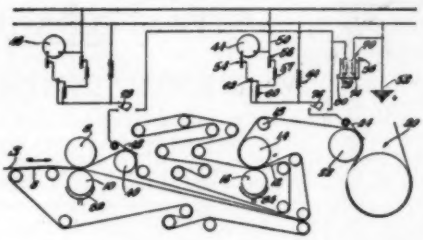
manufacture was determined by comparing the change in electrical conductivity when kraft cellulose was added with that produced by the addition of small amounts of sodium hydroxide. The method is not very accurate on account of the large temperature coefficient of the conductivity.

The absorption in both cases is greater than from pure sodium hydroxide solutions of the same alkalinity, and this is ascribed to the presence of other sodium salts. It is computed that the loss due to absorption from black liquor amounts to from four to eight kilograms of sodium sulphate per ton of cellulose.

Paper Making Machine

UNITED STATES Patent, No. 1,589,450 describes a method and machine for the manufacture of paper in which the traveling web of paper stock is subjected to successive opera-



tions, a current of electricity being passed through the web at different points in its travel between the operations that are performed on it. The resistance of the passage of the current is indicated and the operations are accordingly regulated in order to maintain this resistance constant.

Determination of Lignin in Wood and Wood Cellulose

AFTER dissolution of the cellulose by any of the known methods, the solution containing the lignin in suspension is filtered through a layer of finely-divided naphthalene in a glass or porcelain filter-crucible. To prepare the filter a suitable volume, for example ten to twenty cubic centimeters, of a five per cent solution of naphthalene in alcohol is poured into twice its volume of water, and the paste thus obtained introduced into the filter, pressed down and washed. After use the naphthalene is sublimed over a water-bath and the lignin is thus obtained pure and loose. Papierfabrikant, 1926, volume 24, page 185.

Formation of Carbon Dioxide in the Digestion of Sulphite Pulp

FROM 22 to 56 per cent of carbon dioxide are often found in the gases that escape from the digester during the digestion of sulphite pulp. The exact percentage varies in accordance with the temperature of the cooking. The gases evolved from the liquor during the digestion process have also shown a content of carbon dioxide from 4.8 to 20 per cent. Carbon dioxide to the proportion of 83 per cent has been found in the vapors that are evolved from liquor removed during the course of the digestion and cooled down to a temperature of 30 to 40 degrees C.

In all cases the percentage of carbon dioxide increases with the temperature of the digester. The formation of carbon dioxide during the digestion is probably due to the same phenomena which are active during the pyrogeneous decomposition of wood. The proportion of carbon dioxide formed can be readily reduced by lowering the temperature at which the digestion is carried out.

For further details see Boumajn. Promychl., volume 4, pages 615-7.

Utilization of Sulphite Cellulose Waste Liquors

AFTER treatment with chlorine, sulphite cellulose waste liquors have tanning properties. Besides chlorination, oxidation occurs with the formation of hydrochloric acid, in which the product is insoluble. The more dilute the waste liquor, the further the chlorination proceeds before it is interrupted by the precipitation of the product, which, from dilute solutions, may contain thirty per cent chlorine. The higher the chlorine content, the more stable the product and the best results are obtained when chlorate and hydrochloric acid are used.

A product is then obtained which dissolves more or less readily in water and tans as well as vegetable tannins. When titrated with alkali, hydrochloric acid is split off, and the alkali consumption is double the equivalent of this acid. It is concluded that chlorinated quinones are present. By the action of chlorine, sulphonic acid groups are also split off. Chlorinated sulphite liquor is a disinfectant. Its action is strongest on Staphylococci and weakest on Bacilli coli. Chloranil is similarly a disinfectant, but its hydrolysis product, chloranilic acid is not. The hydrolysis of chloranil is accelerated by amino acids and polypeptides, and it is probable that its disinfectant action is due to acid thus produced in the immediate vicinity of the bacteria. Papierfabrikant, 1926, volume 24, pages 145 to 148.

Coating Paper

A PAPER which is to be used in printing operations is treated with a liquid which consists of shellac, banana oil and alcohol. Thereafter the paper is coated with a suspension of chalk. United States Patent, No. 1,591,238.

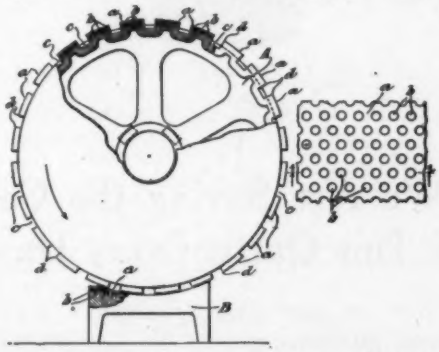
Paper Making on the Fourdrinier Machine

THE process of making paper on the fourdrinier machine, which is described in German Patent, No. 428,843, is characterized by the fact that the dehydration of the paper web on the fourdrinier wire is almost completely avoided by the use of a counter-pressure of water in the first part of the fourdrinier wire. This means that it is not necessary to shake the wire back and forth as is customary on the ordinary type of fourdrinier machine.

In carrying out this process it has been found that the paper fibers no longer have the tendency to arrange themselves in the longitudinal direction, but, due to the fact that they float around in the water and under the influence of shaking they are made to lie in all directions and in this way felt together to give a well-knit paper web. A uniform paper is obtained and the strength of the paper will be found to be alike in all directions. Due to the good feeling of the fibers obtained by this process, it is possible with certain kinds of raw materials to do away with the shaking altogether. But when particularly good results are desired it is better to shake the wire.

Reworking Paper Stock

THE illustration shows an element of a refining machine, the operative face of which is pitted with artificially formed open holes. A smooth solid pulping surface is how-



ever provided between these holes and the area of this surface is at least equal to that aggregate areas of the holes. United States Patent, No. 1,583,771.

Wood Preparer for Steamed Mechanical Wood Pulp

THE apparatus which have been used up to the present time for softening and cooking the wood which is afterwards used in the manufacture of steamed mechanical wood pulp have all possessed the disadvantage in that there was no surety that all the logs would be uniformly softened and that the ligneous and resinous incrustations surrounding the wood fibers would be uniformly dissolved away. This connotes of course that there was no certainty as to the exact length of

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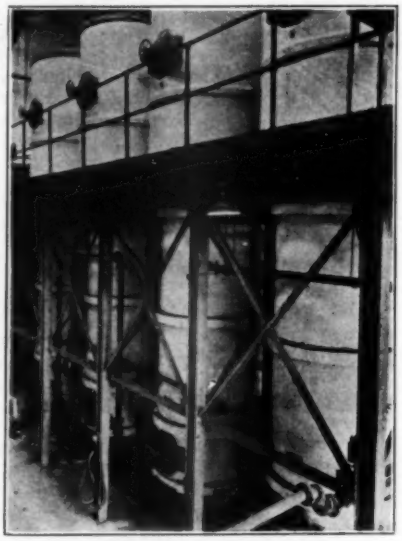

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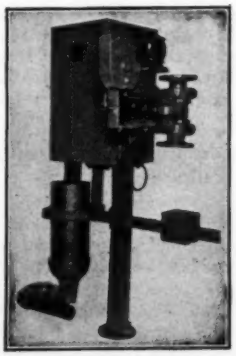

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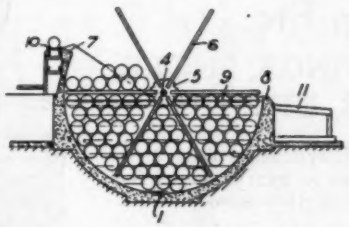
time that the wooden logs had to remain in the apparatus. The new form of machine which is patented in German Patent, No. 423,366, does away with this disadvantage. This machine is shown in the accompanying figure.

The container (1) has practically the form of a half of a cylinder. In this container, which has vertical, smooth side walls, a shaft (4) is arranged and on this shaft there are a number of agitating arms. These arms are fastened to the boss (5) which is attached to the shaft (4) and which makes up a paddle wheel. The edge (7) of the vat is somewhat higher than the shaft (4). This is on the feed side, while on the discharge side the edge (8) is lower than the height of the shaft (4). The level of liquid in the trough is indicated at (9). The apparatus is of course provided with the necessary inlet and outlet connections and piping which are not shown on the figure.



The wooden logs are carried to the apparatus by means of a conveyor shown at (10) and then rolled down over the edge (7) into the trough where they are caught by a blade of the paddle wheel. As soon as the number of logs on this paddle blade becomes large enough, the paddle wheel rotates and another blade is brought into position ready to receive the logs. After the trough has become filled with logs in this manner, then the logs begin to be raised over the edge (8) at the delivery end of the machine and they roll down the inclined plane (11).

It is understandable that the time that the logs remain in the apparatus is determined by the speed of rotation of the paddle wheel and this speed is dependent only on the quantity of logs that are rolled on to the blades in a definite period of time. The number of logs thus fed to the machine can of course be controlled at will. **German Patent, No. 423,366.**

Swelling Action of Caustic Soda on Cellulose Pulp

THE swelling action of caustic alkalies in the presence or the absence of neutral salts on bleached and unbleached soda pulp and sulphite cellulose was determined by a method which is described in Kunstseide, volume 7, pages 252-6.

This method consists in observing the increase in weight of the cellulose in the form of paper after immersion in the alkaline solutions and drainage from excess of liquor, correction being made for the density of the liquor. The maximum swelling effect was produced by solutions which contained from eleven to twelve per cent of sodium hydroxide, and fifteen per cent (weight divided by volume) of caustic potash. The swellings amounted to eleven and 5.5 per cent respectively.

Swelling is considerably reduced by the presence of neutral salts and other substances, for example, sodium chloride, sodium carbonate, ammonia, alcohol, sugar, tannic acid and gelatine.

For example, a twelve per cent solution of sodium hydroxide containing ten per cent of sodium chloride produces a swelling of only 4.9 per cent. Swelling is also reduced by rise in temperature of the caustic liquor, but this effect is less evident with highly concentrated alkaline solutions.

For example, a ten per cent solution of sodium hydroxide produces swellings of 14.6 and 6.6 per cent at temperatures of 13 to 16 degrees C and 23 to 25 degrees C respectively. On the other hand, under similar conditions the swellings produced by an eighteen per cent solution of sodium hydroxide are 6.6 and 5.9 per cent.

Dry cellulose liberates 2.6 calories per gram when moistened with six per cent of water. Over a period of twenty hours, alkali cellulose saturated with seventeen per cent of sodium hydroxide liberates 0.417 calories per gram when moistened with six per cent of water.

Over a period of twenty hours, alkali cellulose saturated with seventeen per cent of sodium hydroxide liberates 0.417 calories per hour per gram, whereas under similar conditions during twenty-four hours, dry alkali cellulose (as prepared for the manufacture of artificial silk) liberates 0.27 calories per hour per gram, the rate of liberation of heat not being affected by the presence of oxygen. Alkali cellulose heated to a temperature of 60 degrees C and then cooled liberates no heat on keeping.

Chlorinated Products from Cellulose Waste Lyes

CELLULOSE waste liquor is chlorinated in an electrolytic cell, the anodes of which are constructed of materials which allow of varying overvoltage towards chlorine and oxygen respectively, so that chlorination and oxidation may be effected simultaneously. A high degree of chlorination may be effected when electrodes of magnetite are employed. Chlorination is preferably carried out at a moderately high temperature, and the anode and cathode are separated by a diaphragm.

Or the process may be made continuous by causing the electrolyte to flow from the cathode to the anode, the diaphragm being omitted.

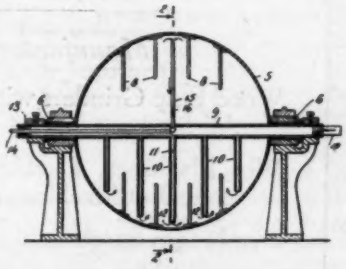
For example, from sulphite cellulose waste liquors chlorinated products containing 25.4 to 22.7 per cent of chlorine, easily soluble in water with a brown color and containing no free hydrochloric acid, are obtained by using a solution of sodium chloride at 40 to 50 degrees C as electrolyte, with a magnetite anode, an earthenware diaphragm and a graphite cathode, or a graphite cathode, or a graphite anode and an iron cathode. German Patent No. 419,815.

Treating Sulphite Waste Liquors

CARBONIZATION of sulphite cellulose waste liquors with the purpose of using them for fuel purposes cannot be carried out except at high pressures. But if mineral salts are added to the liquor, then better results are obtained. Thus the addition of such salts as magnesium chloride, calcium chloride and the like as well as evaporated seawater, enables carbonization to be effected at a temperature of 170 to 180 degrees C under a pressure of five to eight atmospheres. The organic ingredients separate from the liquor in the form of a powdered carbon. Filtration is facilitated by the addition of such materials as wood sawdust, bark wastes, wood wastes and the like to the liquor. The filtered saline liquor can be sent back again into the cycle of operations. If sulphuric acid is added to the liquor, sulphur dioxide, which is recoverable, is evolved during the carbonization. French Patent, No. 587,383.

Bleaching Apparatus

THE illustration shows a pulp bleaching apparatus. It consists of a shell through which a shaft (9) is inserted. The shaft is provided with arms (10) and the shell with arms (8). These arms are staggered so that the arms of the shaft do not make contact with the arms on the shell on rotation. This movement of the arms causes the mixture of pulp and bleach liquor to be vigorously agitated, preventing the formation of lumps and materially assisting in the bleaching of the product. The shaft is provided with arms (10) and the shell with arms thereby the introduction of air and its dissemination through the mass of pulp.



Starch Sizing of Paper

IN ORDER to determine in what manner the starch sizing of paper influences its qualities, a number of sizing experiments were carried out with raw and cooked potato, wheat and rice starches as well as with alkaline soluble starch. In one series of experiments the starch sizing was used on rag half stuff and in the other series on bleached chemical pulp. In all cases an increase in the strength of the paper was occasioned by the addition of the starch sizing but the degree of this increase varied in accordance with the character of the raw materials employed. Thus, for example, sulphite paper experienced a greater increase in strength by the addition of starch than papers made from rag stock. The resistance to folding increased in the latter case but decreased in the

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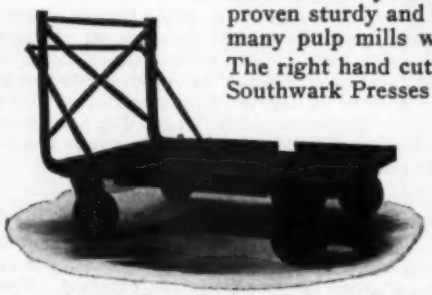

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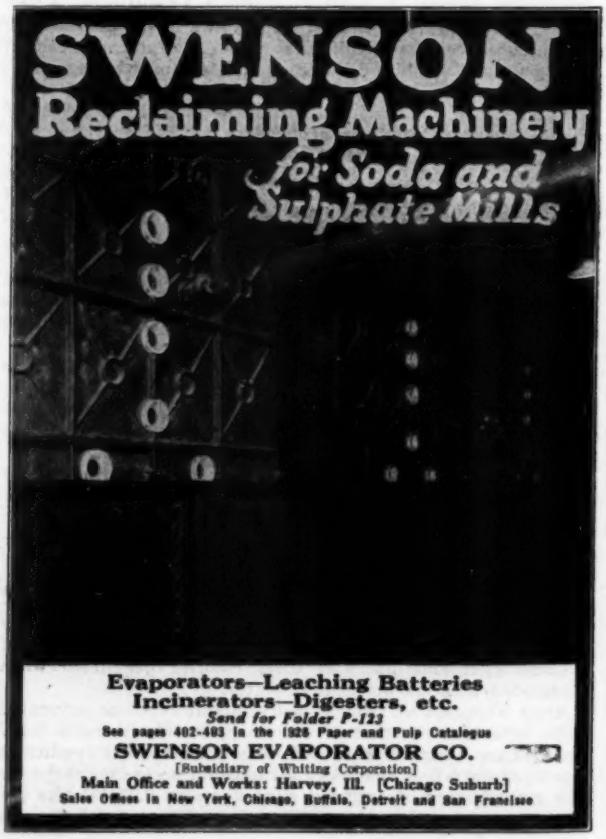

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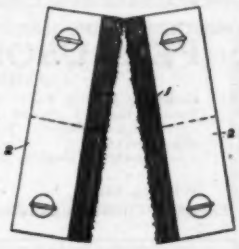
former case. Starch in combination with rosin size has a very marked effect in improving the sizing quality, handle and appearance of the paper, and also when fillers are added. Paper Maker International Number, volume 70, page 53.

Fibrillose Margins on Paper

FRIBILLOSE margin is produced on paper by a process which consists initially in securely clamping an intermediate quantity of the paper of predetermined size at its opposing edges, then in saturating the paper in volume intermediate said clamped points, then in moving the clamped points in opposite direction to sever the paper and expose the fibers. United States Patent, No. 1,589,542.



Cleaning the Paper Web

IN ORDER to bring back the used paper felt to its original condition, it is not only necessary that all the impurities which it has collected be removed but certain other treatment must be carried out on it. The used condition of the felt is dependent on the form and the change in position and condition of the felt fibers, which is brought about by the compression of the fibers as the felt passes between the press rolls. In order to prevent this condition from becoming permanent, it is necessary to subject the fibers to a strong agitation, much like the teazing of the hair felt in a mattress which has been used for a considerable length of time.

For this purpose it suffices to direct a stream of the treating fluid through the internal structure of the felt and when it is possible to change the direction of the stream of water so that it enters at the other side of the felt. In this manner the fibers of the felt are roughened up and curled while, when the stream of water is directed through the felt in one direction only, it will be found that they are pushed over to one side only.

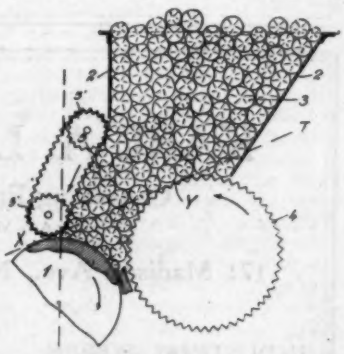
The apparatus patented in German Patent No. 426,754, freshens up the felt in this manner in place of merely cleaning it. The apparatus consists of a nozzle which is moved back and forth across the width of the felt and this nozzle has at least one opening for the water. It is also connected with a suction chamber in order to effect a suction action on the felt. The opening or openings for the current of treating fluid are arranged between the suction nozzles of the suction chamber so that the felt is held down on the nozzle in the vicinity of the sprays.

The apparatus is arranged in such a manner that both steam and water may be used in the cleansing of the felt.

Magazine Grinder with Power Driven Feed

UNITED STATES Patent, No. 1,591,801, is concerned with a magazine grinder provided with a power driven feeding device.

The rotating grindstone is shown at (1) in the accompanying illustration. The wooden log magazine is located above the grindstone at (2), the locating being such that the magazine is one side of the vertical plane passing through the grindstone axis, indicated by the dot and dash line in the figure. The feeding device driven by the gear wheel (5) is located in the lower part of the apparatus and the chain (5') is arranged so as to grip the wood and press it against the surface of the grindstone. A second feeding device is provided remote from the vertical plane, mentioned above. This is indicated by the toothed wheel (4). The position of this wheel is such that the tangent drawn common to the periphery of the wheel and the upper edge of the grindstone touches the curve at a point which lies within the interior of the magazine.

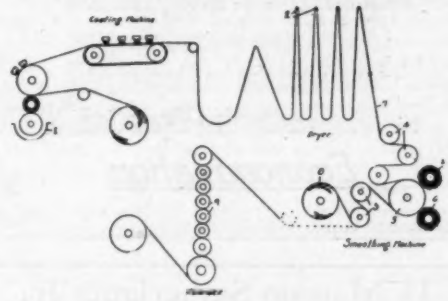


Multiple-Effect Evaporator

HUGH K. MOORE has assigned to the Brown Company, Berlin, N. H., patents 1,582,066-7, issued April 27, 1926, on a multiple-effect evaporating system. As abstracted in British Chemical Abstracts, July 9, 1926, the patents cover a multiple-effect evaporating process in which the liquor flows from an intermediate effect through progressively hotter effects and then through effects that are progressively cooler. Liquor which would become viscous if completely concentrated in the cooler effects, is supplied hot to a heat interchanger and cooled to the temperature of an intermediate effect and is passed through that and a series of cooler effects. From the coolest effect the liquor is reheated to the temperature of the effect next hotter than the starting point by means of the heat interchanger, and then passes through a series of hotter effects, being heated while passing to each of these effects by heat taken from the liquor leaving the hottest effect of the series.

Finishing Paper

THE method of finishing paper, which is described in United States Patent No. 1,583,788, consists in coating with the paper with an enamel and then passing the coated web through a dryer is shown at (2) in the figure. There the paper is dried to such a point that the coating is about to set, and then while in that condition of dryness it is subjected to the action of a rotating brush.



Wire Part of a Rapid Paper Making Machine

IN PAPIERFABRIKANT, volume 23, pages 557-67 there is contained a comprehensive study of the operation of the wire part of a rapidly running paper making machine and of the factors that influence the formation of the paper web on the machine. The position of the paper fibers and therefore the formation of the paper web are affected by two factors or processes which affect the direction in which the fibers are permitted to align themselves. In the first place, due to the great speed of the paper making machine, the water is removed from the fibers at a very fast rate. The fibers are thereby made to assume a vertical position and are sort of lumped together, so that the appearance of the paper is characteristically cloudy, showing accumulations of fibers at some points and lack of sufficient fibers at other points. The paper is naturally deficient in strength.

A second orientation of the fibers is effected through the movement of the wire, whereby the position of the fibers is again changed. Both processes, the dehydration of the fibers and the motion of the wire, must be regulated in some manner so that they bear a certain definite relationship to each other. In the original article there is discussed a definite method of operating the wire so that the proper relationship between the two factors can be reached.

It was also pointed out that there are other factors that influence the formation of the paper and its properties, such as, the current of stock, the various rollers, the breast roll, the suction rolls and the couch rolls, etc. A modern well built rapid operating paper making machine is also described in the article.

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Industrial Engineer
PULP AND PAPER MILLS, HYDRO-ELECTRIC AND STEAM POWER PLANTS
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PAPER AND BOARD MILLS DESIGNS
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C. C. HOCKLEY
Consulting Engineer
Paper & Pulp Mills
Power Plants
Industrial Reports
Appraisals
Northwestern Bank Building
PORTLAND, OREGON

New York August 2, 1926.

IT IS the customary thing for the paper market to develop a slowing-down process in midsummer, and while at the moment business in most classes of paper is on a comparatively good scale there are signs plainly visible of a quieter situation than existed up to recently. The vacation spirit is in the air, the hot weather is sapping the energy of members of the trade, there is less activity in the consuming fields, and the general condition of the market is without question less lively than was the case only a short while ago.

On the other hand, it can be stated without much fear of contradiction that the paper industry as a whole is experiencing a greater degree of activity than is usual for midsummer. Demand for many kinds of paper is holding up remarkably steady. In going the rounds of the trade here and in other important centers, one almost invariably hears statements made by jobbers, mill representatives and manufacturers such as: "Why, yes, business is fairly good;" "No kick whatsoever, we are keeping busy," and "Demand is quite satisfactory, no great falling off has been noted."

Forsooth, it is not the matter of the volume of business which prompts members of the trade to complain; while it is acknowledged demand lacks the snap that is a cardinal feature of the market in busier seasons of the year, it is reported generally business is developing in satisfying proportions for this period, but there is a great deal of complaint on the score of the lack of profit being realized today. Conditions as concern paper prices have reached a point where profit in paper business is almost an unknown quantity. This seems the outcome not of over-production but rather over-capacity. Paper mills of the country are so equipped they can produce more paper than is required in the consuming trades; this is not a new predicament but one which has existed for some time, but it is accentuated at just this time when there has been a customary midsummer contraction of demand. It is asserted that some manufacturers have "taken the bull by the horns" in their efforts to corral enough orders to keep their plants running full tilt and have cut prices rather drastically; this is true not only among paper manufacturers but among converters, with the result that throughout the industry there is complaint of the extreme difficulty experienced in making a fair ratio of profit in the business transacted. Competition is most keen, and some of it—a good deal of it—is not of a healthy character. Manufacturers and converters who endeavor to keep prices on a profitable level are faced with the dire necessity of slashing in order to meet "the other fellow," and the net result is that prices of paper of many classes are on dangerous ground with the assurance of profit literally wiped out.

Available statistics go to prove that production of paper is keeping on a moderately high level. Newsprint figures for the month of June were particularly encouraging, showing that a new high record of print paper output was reached in that month in the United States and Canada. Domestic mills manufactured a total of 142,166 net tons of newsprint in June and shipped out 141,521 tons, according to the News Print Service Bureau, while Canadian manufacturers made 158,601 tons and shipped 161,108 tons, making a total for both countries of 300,767 tons produced and 302,629 tons shipped. During June the U. S. mills operated at 96.1 per cent of rated capacity and the Canadian mills at 97.9 per cent. There was also 15,250 tons of newsprint produced in Newfoundland and 1,135 tons in Mexico, so that the total North American production in June was 317,134 tons.

During the first six months of this year newsprint output in the United States and Canada reached a total of 1,737,836 tons, recording a large gain over the 1,510,490 tons made in the corresponding time last year and establishing a new high record of print paper production. The combined output of the U. S. and Canadian mills in the first half of 1926 was 15 per cent more than a year ago, and was just slightly less than two tons for one produced in the similar period as recently as 1921. Stocks of newsprint at mills at the end of June last totaled 18,871 tons at U. S. mills and 11,795 tons at Canadian mills, making a combined total of 30,647 tons which was equivalent to 2.6 days' average production.

It is quite apparent consumption of newsprint has decreased considerably in the last several weeks. Midsummer has witnessed a decline in advertising and publishers have of course cut down the size of their issue. Reports state, however, that supplies are moving into consuming channels in a steady manner, that manufacturers seemingly have little of their product to divert to other than contract quarters, and that no element of easiness has developed in market prices. For a time earlier this year some apprehension was felt in trade circles concerning the future of the market, it being feared that the big increase in productive capacity, especially in Canada, this year might lead to a saturated market, but since consumption has kept pace so well with the added mill capacity the belief now exists the market will not be affected in the least as more tonnage comes onto the market. In fact, prospects are for a further large gain in consumption this fall and winter, even above the very heavy consumption during the first six months of this year, it being expected consumption will attain new record-breaking heights late in the year.

There has been a little strengthening of prices on kraft paper. Converters are understood to have come into the market and bought on a scale which carried prices higher, more especially on southern kraft which is now quoted at about 4.75 cents a pound, with other No. 1 domestic kraft priced at 6 cents and more. Tissue is in an easy market position, demand is slight and prices have declined to around 75 cents a ream for No. 1 white. Reports state there has been price-slashing on napkins, towels and other tissue products, which has greatly disrupted the market.

Fine papers are in quiet call, with most orders calling for small lots and with buying limited strictly to urgent and immediate requirements. No important changes have occurred in quotations though the tone is easy. Book paper is holding its own in price and is moving well on contracts and back orders. New business, on the other hand, is developing slowly.

Building papers are in much less demand. The statement was made that felt paper mills are running only at approximately 60 per cent of capacity, having experienced a marked diminishing of demand for their product within the last month.

Box boards show a tendency to improve in activity, yet consumers continue to buy against direct needs chiefly, and mills are competing for orders. Quotations advanced early in July and now are around $45 a ton delivered New York for filled news and $42.50 for plain chip board. Wall board is in routine demand with the market probably a bit quieter than a month ago.

Wax Paper Manufacturers Revise Trade Customs

At a recent meeting of the American Waxed Paper Association, it was decided to revise the association's trade customs so as to provide that waxed paper bread wrapper rolls would hereafter be stocked in widths varying by one-half inch only, the object being to reduce inventories and make it possible to sell standard widths at the lowest possible price consistent with reasonable profit over the cost of production.

This action is in full accord with efforts by the Division of Simplified Practice of the U. S. Department of Commerce to simplify or standardize production units in the interest of the manufacturer, the distributor, and the consumer alike.

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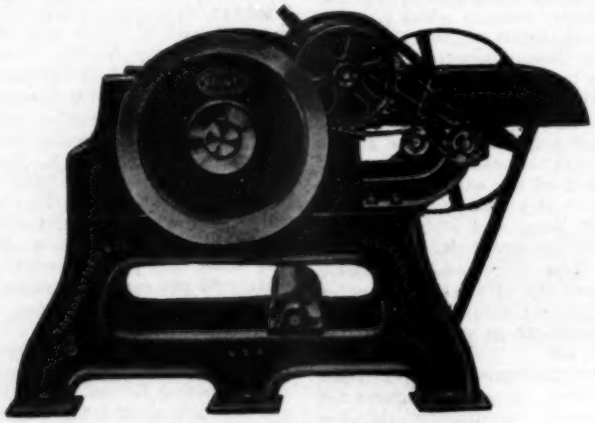

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Papermaking Rags

It might be stated that the market for papermaking rags is quite characteristic of the midsummer season. After showing substantial improvement in activity during June, the market quieted early in July and through the balance of that month remained in a condition bordering onto dullness, business being very spotty and at best of small volume. Paper manufacturers are buying, of course, as their needs develop but there are plenty of signs that requirements are smaller by a good margin at present than during busier periods of the year, and most of the orders placed call for limited-sized lots of rags. Moreover, the price trend in practically every class of rags is downward, which prompts consumers to hold off buying in so far as their wants will permit.

The situation is very much in favor of buyers. There is no appreciable scarcity of papermaking rags although it probably is true a few grades are in restricted supply. In such cases, however, consumers apparently are substituting other grades in a way which prevents any advance in values. Dealers say that fresh supplies are coming in from country sources in much less than normal amount; this doubtless is so, yet this factor has very little influence on the market while demand from consuming quarters is as limited as it happens to be.

Probably the feature of the market in recent weeks has been the slowing down of demand for roofing rags and the easing of prices on this class of stock. Felt paper mills increased their buying of rags to a sharp degree in June, yet during July demand for roofing was at a minimum. This seemed due to two major reasons, the first of which was that manufacturers experienced a lull in the demand for felt which caused them to curtail operations and thus consume fewer rags, and the second being that they purchased fairly heavily in June and consequently were enabled to hold aloof as buyers in July. Prices gradually declined last month until the quoted basis now is about 1.70 cents a pound f. o. b. dealers' points for No. 1 domestic roofing stock, and 1.35 cents for No. 2 packing. It is likely some purchases have been made at slightly under these figures. An unusual situation is that roofing rag markets abroad appear firmer than is the case here. It is a fact that importers in frequent instances are quoted prices by shippers in various parts of Europe which are higher than those felt mills in the United States are willing to pay to importers. It is reported that the production of roofing felt in Germany has increased considerably in the last month or two, with the result exporters in that country have less supply of rags to offer the U. S. and thus are enabled to hold out for higher prices. Importers assert it is next to impossible to import from Germany today at the prices asked there and sell to mills in this country at the prices the latter care to grant and realize a profit. On the other hand, it is understood rags are being obtained in France relatively cheap owing to the low rate of exchange on that country.

Old white rags and thirds and blues are in slight demand. There is a routine amount of business current but it fails to have noticeable influence on market values; in fact, the trend in prices of these grades is downward. Repacked thirds and blues are available at 2.65 and 2.75 cents a pound at dealers' points, and probably at a little lower, while miscellaneous blues are offered by dealers at 1.75 cents f. o. b. points of shipment. Repacked No. 1 whites are quoted around 6.50 cents a pound, and No. 2 repacked at 3.50 cents at dealers' shipping points.

In new cuttings, demand is exceedingly narrow and prices have undergone further recession. There is, in fact, surprisingly little life in the market. Fine paper mills appear to be getting along with stocks on hand in such a manner as to preclude the necessity of additional buying, except on a very small scale, and notwithstanding a distinct scarcity of some grades of cuttings the price trend on cuttings in general is toward lower levels. Dealers ask figures which usually are shaded when actual business transpires, so that quotations at present are largely a nominal matter. About 12.25 cents a pound at shipping points is asked for No. 1 white shirt cuttings, 6 cents for fancy shirt cuttings, 8 cents for light silesias, 8 cents for blue overall cuttings, 5 cents for washables, 12.25 cents for unbleached muslin cuttings, and 9.50 cents for white lawns, but as a general thing sales are at slightly under these levels.

Foreign dark colored cottons are quoted at 1.50 cents ex dock New York, and foreign linsey garments at 1.65 cents. Roofing paper manufacturers, however, are reported to have effected some purchases at a shade below these prices. The better qualities of foreign rags are quiet and tending off in value.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.00-12.25
White shirt cuttings, No. 2	8.25- 8.75
Fancy shirt cuttings	6.00- 6.25
Washables, No. 1	4.75- 5.00
Unbleached muslins	12.00-12.25
White lawns	9.25- 9.50
Overall cuttings, blue	7.75- 8.00
Black silesias	4.75- 5.00
Light flannelettes	9.50- 9.75
Canton flannels, bleached	9.75-10.00
Canton flannels, unbleached	8.75- 9.00
Shoe cuttings, bleached	10.50-11.00
Shoe cuttings, unbleached	9.50-10.00
Light silesias	7.75- 8.00
O. D. khaki cuttings	6.00- 6.25
Mixed khaki cuttings	5.25- 5.50
Corduroy cuttings	4.00- 4.25
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.25- 6.75
Whites, No. 2 repacked	3.25- 3.75
Whites, house soiled	2.25- 2.50
Whites, street soiled	2.00- 2.25
Lace curtains	6.25- 6.50
Thirds and blues, rough	1.65- 1.85
Thirds and blues, repacked	2.50- 2.75
Black stockings	4.00- 4.25
Cotton canvas, No. 1	5.50- 5.75
White cotton batting	3.25- 3.50
Roofing, No. 1	1.65- 1.75
Roofing, No. 2	1.30- 1.40
Linsey garments, foreign	1.60- 1.70
Dark colored cottons, foreign	1.45- 1.55
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

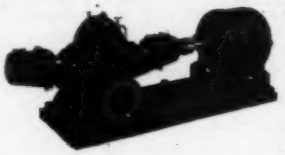
Not much actual change is recorded in market price levels of old rope and bagging but consuming demand is restricted and the trend in values is downward. There has been a little decline in some grades, and indications are that unless buying by paper manufacturers increases, lower market levels will be witnessed shortly. Consumers of old rope show pronounced preference for domestic over foreign rope, with the result prices of the former are well above a normal parity with the

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely controls the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

CENTRIFUGAL PUMPS FOR THE PAPER INDUSTRY



The Bethlehem Horizontal Centrifugal Pump is of the double-suction, single-stage type with horizontal split casings. Capacities 200 to 17,000 gallons per minute against heads of 20 to 250 feet.

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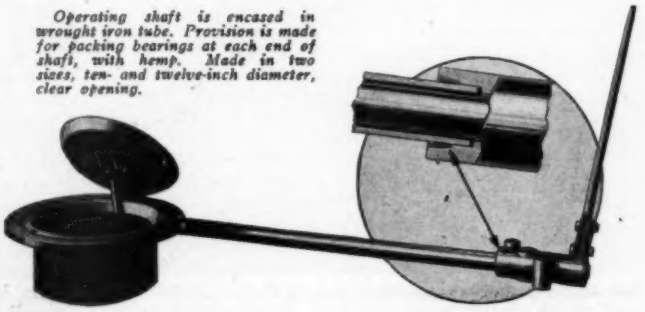
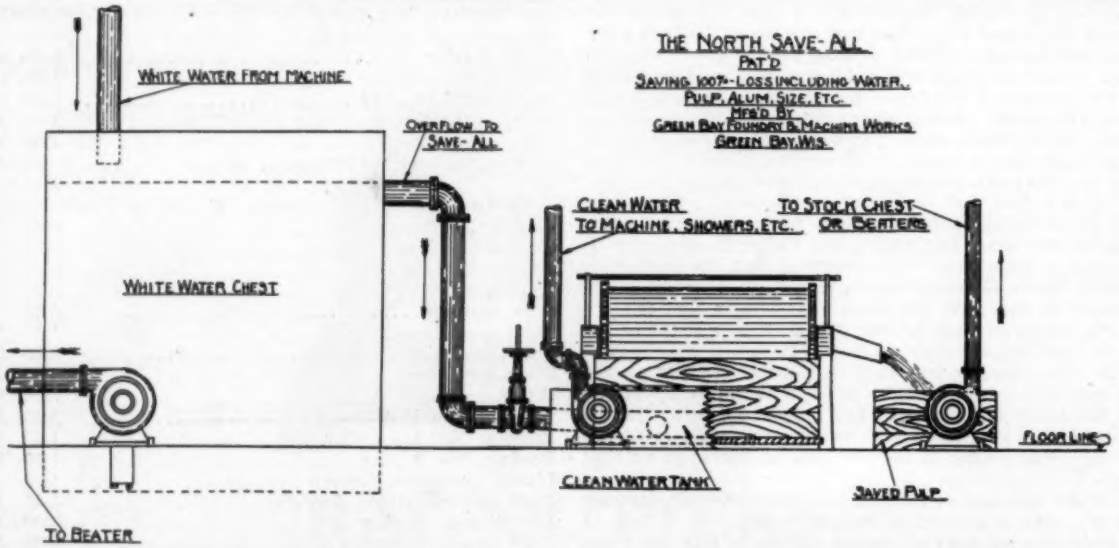
No "fishing" and "poking" around the inside of the beater tub. This new dumping valve is constructed to operate **from the outside** of the tub. May be made either right or left hand by simply reversing two small bronze bushings.

Brass valve seat and lid are correctly proportioned. The valve in general is durable, easily operated and installed, and is positive in action.

Operating shaft is encased in wrought iron tube. Provision is made for packing bearings at each end of shaft, with hemp. Made in two sizes, ten- and twelve-inch diameter, clear opening.



DAYTON GLOBE IRON WORKS, Dayton, Ohio



STOPPING POLLUTION AND MAKING A PROFIT

The above layout on a ten-ton machine shows a profit of $103 per day with no pollution of streams and an efficiency of 98% in returned pulp. All of the eight paper machines in this mill are thus equipped. Alum cut down one third. Name of mill on application.

We Sell Water Filters, Valves, Pumps, Stone Plates, Thickeners

See Page 347 in the 1928 Paper and Pulp Mill Catalogue

GREEN BAY FOUNDRY AND MACHINE WORKS, Green Bay, Wis.

latter, a difference of something like $20 a ton existing at present whereas usually not more than $5 a ton separate prices of the two. It is said also that paper manufacturers in this country are buying old rope direct abroad in some cases, and thus reducing the demand for the commodity to importers here. Domestic No. 1 old manila rope is selling at about 5.25 cents to slightly higher per pound at dealers' shipping points, while imported No. 1 rope is worth only in the vicinity of 4.25 cents ex dock New York. Strings are in slack demand and tending cheaper in price.

A significant factor in old bagging is that a record-breaking raw jute crop is forecast this year in India, it being estimated by the Indian Government that an outturn of well over 11,000,000 bales of the fiber will be harvested. This doubtless will mean cheaper jute and cheaper burlap, and the influence on scrap bagging will be to lower prices. At the moment, bagging is moving to paper mills in fair volume at prices of around 2.35 cents a pound at shipping points for No. 1 scrap, and 1.25 cents for roofing bagging. Imports are on a fairly large scale though it appears as if the bulk of supply coming in from abroad is against old orders.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.50-3.75
Gunny, No. 1 foreign	3.40-3.60
Scrap bagging, No. 1	2.25-2.40
Roofing bagging	1.20-1.30
Wool tares, heavy	3.50-3.75
Wool tares, light	3.25-3.50
Manila rope, No. 1 foreign	4.25-4.50
Manila rope, No. 1 domestic	5.25-5.50
Sisal strings	2.25-2.50
Mixed strings	1.50-1.75

Old Paper

Old paper prices are holding fairly steady with the market devoid of feature. Demand from board mills and other consuming quarters is limited, as is ordinarily the case in midsummer, yet there seems to be sufficient buying going on to sustain market values fairly well. There have been no increases in prices except possibly in one or two specialty grades; in fact, the tendency is more in a downward direction, but changes have been of very slight dimensions. Dealers assert that a strong factor in the market is that collections have been curtailed to a minimum, it having been found that very little profit is possible under prevailing market circumstances and at ruling market values, and that there is no question should demand expand a rise in prices would occur almost at once.

In the East a good deal of complaint is heard anent the present level of old paper values. Additional strikes of collectors have occurred in New York, it is reported, which has further reduced the available supply of most grades, particularly the low qualities, in that important producing center. However, board mills appear to be fairly well covered, evidently having good stocks on hand, and there is no rush of buying. Such demand as exists is of very orderly character, and consumers are managing to control prices fairly well through such a policy of buying. Shavings, old magazines, ledgers and kraft paper are moving in routine amounts, with little change in prices although consumers are granting premiums for especially packed qualities of these grades. Folded news is selling at 55 to 65 cents a hundred pounds at dealers' shipping points, and No. 1 mixed paper at 45 to 55 cents. A firm item is white blank news which is fetching 1.80 cents per pound at shipping points.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.40-3.60
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.80-3.00
Colored shavings	.90-1.00
Heavy book, No. 1	1.05-1.15
Crumpled book, No. 1	.80- .90
Ledger stock	1.50-1.75
Kraft, No. 1	1.85-2.00

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JOSEPH GATTI President and Treasurer

GATTI Paper Stock Corporation
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THE NICHOLS CHEMICAL CO., LTD., MONTREAL

SOLVAY

STANDARD IN SODA SINCE 1881

Quality and Service Guaranteed by the Largest Source of Supply

Soda Ash
Caustic Soda

Over 75 stock distributing points assure prompt shipment with minimum transportation charges.

The Solvay Process Co.
Detroit, Mich.; SYRACUSE, N. Y.; Hutchinson, Kas.
Sales Department
WING & EVANS, Inc.
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Boston Cincinnati Cleveland Detroit Pittsburgh
Chicago Syracuse Indianapolis
Philadelphia St. Louis Kansas City

Bleached and Unbleached
SULPHITES
KRAFT PULPS

Foreign and Domestic
GROUND WOOD

PERKINS-GOODWIN CO.
NEW YORK
33 West 42nd St.

PAPER

PRINTING PAPER
OF
EVERY DESCRIPTION

Manilas, No. 1	.65- .80
White blank news	1.80-1.90
Overissue news, No. 1	.65- .75
Folded news	.55- .65
Sulphite mill wrappings	.70- .80
Mixed paper, No. 1	.45- .55
Common paper	.30- .35

Pulp Wood

Reports tell of a little slackening of demand for pulp wood in some districts, yet there is a fairly steady movement of supplies against contracts and back orders, and new buying is on a moderate scale in certain quarters. There is no material change in the market as regards quoted prices. Sellers are adhering to their asked rates and seem to be securing the prices named without much difficulty.

Exports of pulp wood from Canada this year are running somewhat below those of last year, according to Government figures just issued. During June exports from the Dominion amounted to 128,136 cords, valued at $1,426,515, bringing the total for the first six months of 1926 up to 625,454 cords, valued at $5,991,068, as compared with 768,988 cords of a value of $7,421,524 exported in the corresponding period a year ago. Thus, the average value of exports in the first half of last year was $9.62 per cord, against an average of $9.57 a cord in the same time this year.

Mechanical Pulp

Not a great deal of fresh trade activity is noted in mechanical pulp, and the market is not possessed of so firm a tone as was perceptible up to a short while ago, yet there is little definite change in quoted prices. Signs point to a steady movement of ground wood from producing centers to consuming points against contracts and back orders. Consumers at just this time of the year are enabled to refrain from any heavy buying because their current requirements are smaller than in busier periods, but contract supplies apparently are needed and are being used up in a fairly consistent manner. Moreover, producers—and particularly in domestic quarters—are conserving stocks against their own future wants, and are not pushing pulp onto the market. It is stated, in fact, that domestic manufacturers have surprisingly little ground wood for sale, and grinders in Canada seem well sold up for a time.

Prices of domestic ground wood are mainly nominal at around $32 a ton f. o. b. pulp mills. Canadian producers quote $29 a ton or thereabouts in most instances for prime spruce ground wood f. o. b. shipping points, prices of course depending in large measure on the freight to consuming centers and the air dry test. Importers report quotations from abroad on dry ground wood range from $38 a ton upward ex dock at American Atlantic ports, and that most shippers quote well above this level.

Chemical Pulp

There has been a noticeable slowing down of demand for wood pulp, and the market is quieter at present than probably at any time thus far this year, but the condition is viewed as purely a seasonal one, and in spite of the rather narrow current call for supplies, manufacturers both in the United States and Canada seem to be keeping passably busy making and shipping chemical pulp against contracts and old commitments. The price tone is softer than it was. On the other hand, such recessions as have occurred in market values have been at best of slight dimensions, and values are holding remarkably steady in the face of the narrower demand.

The outlook for domestic pulps is regarded as favorable. Many producing mills are fairly well booked up for the remainder of the year, and it is expected demand will revive in excellent volume in the fall. Should the threatened strike in the pulp industry in Norway materialize, demand for domestic and Canadian pulp likely would increase appreciably, this prospect being looked upon at the moment as a very bullish factor.

Bleached sulphite is quoted at 4 cents and up to 4.25 cents for the most popular brands f. o. b. pulp mills, with special qualities ranging in price up to 4.75 cents. No. 1 strong unbleached sulphite is quoted at around 3 cents at pulp plants, and No. 1 book sulphite at 3.25 cents upwards. Domestic

MITTS & MERRILL

Conveyor or Gravity Feed Shredder

THE operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Anything that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

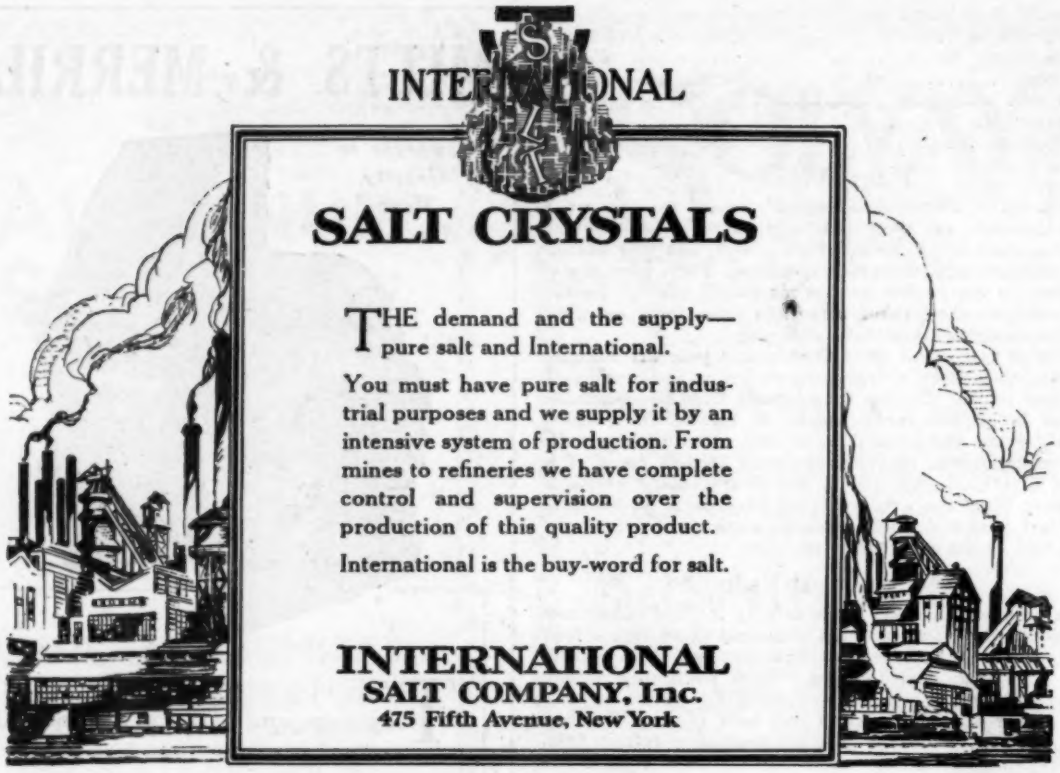
The Mitts & Merrill Shredder performs on magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock, in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.



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SALT CRYSTALS

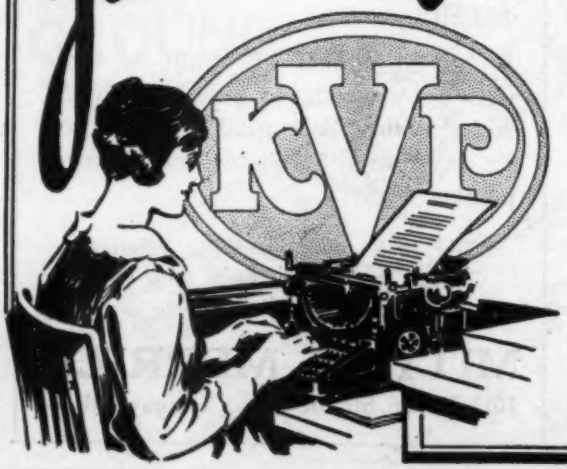
THE demand and the supply—pure salt and International.

You must have pure salt for industrial purposes and we supply it by an intensive system of production. From mines to refineries we have complete control and supervision over the production of this quality product.

International is the buy-word for salt.

INTERNATIONAL SALT COMPANY, Inc.
475 Fifth Avenue, New York

Uncle Jake says



As a tight collar choketh off the wind, so doth the thought of fear close the door on success.

VERY FEW people achieve success single handed and alone. Success is achieved by cooperation—by mixing brains and effort.

When we help you we help ourselves. K.V.P. Bond Paper is a product so far in advance of just ordinary bond paper that we do not hesitate to recommend it to you with positive guarantee back of it.

Uncle Jake
of the
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15-40
White sulphite	11-30
Colored rag	15-40
Colored sulphite	10-30
Ledger—	
White rag	16-40
White sulphite	12-30
Colored sulphite	11-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.70- .80
No. 2 white, 24x36	.65- .70
No. 1 manila, 24x36	.65- .70
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.25- 5.50
Southern Kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	52.50-57.50
Binder's board	70.00-75.00

Chemical Pulp

(*Continued from page 893*)

No. 1 kraft pulp is fetching 2.85 to 3 cents a pound at shipping points, and bleached soda pulp 3.75 to 4 cents per pound.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	2.90-3.15
Unbleached sulphite, No. 1 book	2.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.85-3.10
Screenings, refined	1.40-1.60

Chemicals

Prices of casein continue on an unusually high level, with domestic casein quoted at 17 cents a pound upward and foreign at 18 to 19 cents despite a sagging of demand, consumers buying at present merely to satisfy urgent requirements.

Soda ash is steady quotably at 1.38 cents per pound for 58 per cent light ash in bags at shipping points, and caustic soda is unchanged at 3.10 to 3.15 cents per pound f. o. b. works. Bleaching powder is quoted from 2 to 2.40 cents a pound in large drums at manufacturers' works.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	17.00-19.00
Caustic soda, spot delivery	3.10- 3.15
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	14.00- ....
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38- ....
Starch, papermakers', in bags	3.32- ....
Talc (ton)	15.00-18.00

Paper Testing Methods Adopted

Certain select methods of paper testing which had been proposed by the Paper Testing Committee of the Technical Association of the Pulp and Paper Industry were recently put to a vote of the members on their adoption. B. W. Scribner, chairman of the committee, has announced in a circular to the members that an official tabulation of the votes of 25 per cent of the membership showed a large majority in favor of the tests proposed by the committee, including the one on atmospheric conditions for testing paper, the vote on which stood 61 for and 15 against, as will be noted in the accompanying tabulation:

	For	Against
Sampling Paper for Testing	107	5
Determining the Bursting Strength of Paper	95	10
Determining the Tensile Breaking Strength of Paper	96	5
Determination of Amount of Casein Coating	90	7
Quantitative Determination of Paraffin in Paper	88	9
Quantitative Determination of Resin in Paper	100	1
Atmospheric Conditions for Testing Paper	61	15
Determination of Fiber Composition of Paper	53	12
Determination of Amount of Sulphur Present in Paper as Sulphides	62	3

The result is gratifying to the committee, not only in regard to the endorsement of the committee's work, but also in respect to the general interest in the work as shown by the relatively large number of association members voting.

Fighting the Enemies of Trees

D. A. Crocker, secretary of the Woodlands Section of American Paper and Pulp Association, has favored The Paper Industry with abstracts of articles that have appeared in German forestry journals on the employment of airplanes in destroying insects and fungi that attack plant life. Trees liable to such attacks are dusted with calcium arsenate ejected from boxes carried in low-flying airplanes which are handled so as to fly with or against the wind, but never with the wind on one side.

Calcium arsenate has been found to be effective for the killing of insects like caterpillars and moths that attack plant life and hence it should be a specific against the ravages of the spruce bud worm which has caused so much destruction to the spruce trees of New England. The employment of the airplane for fighting insect pests in this way is described in Deutschen Forstwirts, 76, June 27, 1925.

The Pulp and Paper Trading Co.
21 East 40th Street New York City

DEALERS IN DOMESTIC CHEMICAL AND MECHANICAL PULPS AND PAPER

AGENTS FOR
J. & J. Rogers Company, Ausable Forks, N. Y.
E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.
21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

The survival of the fittest

The easiest way to survive competition is to reduce the cost of production.

Our equipment will help you to do this:

Jenssen Acid Towers
Jenssen Spray Coolers
Bullard Gas Washer
Decker Cooking Process
Kamyr Feltless Wet Machine

G. D. Jenssen Co.
200 Fifth Ave., New York City

The B QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

BATHURST LUMBER COMPANY, LIMITED

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

EXPORTS

Exports of paper and board from the United States during May, 1926, reached a total value of $2,201,274, and while this amount represents a slight increase in comparison with the corresponding month of last year, it is considerably under the value of shipments in April of this year, according to the Paper Division of the Department of Commerce. Exports in April this year totaled in value $2,544,596, and in May, 1925, were valued at $2,164,932.

Nearly all classes were affected by the downtrend during May. Exports of newsprint, which have fluctuated to a considerable extent during the past eight or nine months, again decreased, the May shipments falling 30 per cent under those of the preceding month, and 25 per cent under those for May, 1925, amounting to 3,883,317 pounds of a value of $185,604 in May, against 4,784,003 pounds of a value of $228,505 in April last, and 4,322,086 pounds of a value of $19,385 in May a year ago.

Substantially the same decrease in comparison with the preceding month occurred in exports of writing papers, which also show considerable variation from month to month. Compared with the corresponding month last year, however, May shipments of this class of paper increased nearly 200 per cent. Exports of all other lines of fine paper and of paper specialties during May likewise fell under those of the preceding month, and in most instances below those of the corresponding month in 1925.

Exports of wrapping papers held fairly steady, the aggregate shipments showing a loss of 5 per cent in comparison with April and a like gain in comparison with the corresponding month last year. A notable exception to the general downward trend in the May shipments was offered by boards of all classes, including wall boards. Exports of box boards and bristol board were not only from three to four times the volume of the corresponding month of 1925, but were substantially above the high level of the preceding month, and while shipments of miscellaneous boards dropped slightly under the April exports they were nearly 30 per cent higher than during May, 1925.

Exports of some of the more important classes of paper in May, 1926, were as follows:

	Pounds	Value
Book paper, not coated	1,625,072	$144,234
Wrapping paper	3,108,213	166,989
Tissue and crepe paper	322,929	81,531
Box board	4,098,841	120,975
Other board and strawboard	3,499,318	163,478
Blotting paper	276,586	32,821
Fancy writing paper	42,119	12,104
Other writing paper	780,763	130,545
Toilet paper	345,381	39,499

IMPORTS

Wood Pulp

Undoubtedly the most important development in the imported wood pulp situation is the report by cable that there is every likelihood another strike in the Norwegian pulp industry will occur. The two-year agreement signed by manufacturers and employees in 1924 expires on August 15, and it is stated the mill workers are formulating demands which in all probability will be refused by the mill owners and that a strike will ensue. This information has come from various authoritative sources in Norway and there is no question that the situation is serious and that, unless something unforeseen occurs, a strike in Norway will take place.

Such an event unquestionably would have very important influence on the wood pulp market, not only in the United States but all over the world since Norway is a large producer of pulp for export to various countries, and particularly since sales of pulp for export from Norway this year probably have exceeded any previous year. It will be recollected that on several occasions in the past strikes in the Norwegian industry have greatly disrupted the pulp market, and a shutdown of the mills in Norway this year when the Scandinavian producers have sold record-breaking quantities of pulp and when consumers, especially in the U. S. and England, are depending on receiving needed supplies from this source, would likely cause more or less of an upheaval in the pulp market. As is well known, the pulp mill workers in Norway are well organized and any labor difficulty usually involves the entire industry of that country. Consequently, should a strike be declared, production of pulp in Norway would be brought virtually to a standstill, and consumers in the U. S., England and elsewhere would be obliged to look to other sources to get pulp with which to replace Norwegian supplies.

The market at present is characterized by quite a steady undertone. Quotations from primary sources abroad are all well maintained; in fact, manufacturers in Scandinavia and in other parts of Europe are insistent on the prices named and are not the least disposed to grant concessions, frequently turning down bids from this side at slightly under the rates quoted. Buying interest here is pronounced. There are paper and board manufacturers who, apparently, are ready to contract for 1927 shipments on a fairly large scale but they seek price concessions, and, since shippers abroad will not budge from their firm stand on prices, business is somewhat held up for the time being.

Importations of pulp into the United States continue heavy. During May a total of 95,132 gross tons of chemical pulp was imported, according to Government figures, valued at $6,216,659, and showing a gain over the 91,528 tons of a value of $6,158,890 imported in the preceding month, and also an increase over the 90,681 tons of a value of $5,576,220 imported in May, 1925. May imports brought the total for the first five months of this year up to 476,793 tons, giving a monthly average of 95,358 tons, contrasted with an average of 99,676 tons imported in the corresponding time of last year. May imports of ground wood were 17,078 long tons, making a total for the first five months of the current year of 96,153 tons, giving monthly average of 19,230 tons, against 21,974 tons average imported in same period of 1925.

Bleached sulphite of prime quality is quoted generally at 3.75 to 4 cents per pound ex dock New York for the most popular grades, whereas special mill brands range in price up to 4.25 and 4.50 cents. Strong unbleached sulphite is quoted around 3 cents to 3.15 and 3.20 cents for extra strong pulp. Prime standard Swedish kraft is on a 3 to 3.10 cents per pound basis, and ground wood is quoted at a minimum of about $38 per ton for dry pulp ex dock New York or other American Atlantic ports.

Current market quotations ex dock New York and receipts at the port of New York during June follow:

Bleached sulphite, No. 1	3.65- 4.00
Unbleached sulphite, strong, No. 1	2.95- 3.20
Unbleached sulphite, No. 2	2.75- 3.00
Easy bleaching sulphite	3.15- 3.40
Mitscherlich unbleached, genuine	3.25- 3.50
Mitscherlich unbleached, ordinary	2.90- 3.10
Kraft, standard Swedish	2.95- 3.15
Ground wood, per ton (dry)	38.00-40.00

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

Longcrimp Fourdrinier Wires

USED EXTENSIVELY ON
Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

The Lindsay Wire Weaving Company

(Collinwood Station) CLEVELAND, OHIO

See page 370 in the 1925 Paper and Pulp Mill Catalogue

E. M. Sergeant Co., 500 bls. from Oslo, 1,970 Gothenburg, 1,200 Greaker and 600 Hernosand; Lagerloef Trading Co., 998 bls. from Kotka; Irving Bank-Columbia Trust Co., 2,205 bls. from Trieste and 400 Hamburg; Central National Bank, 2,500 bls. from Copenhagen; Daniel M. Hicks, Inc., 250 bls. from Copenhagen; Chase National Bank, 800 bls. from Oslo; Perkins-Goodwin Co., 150 bls. from Oslo; Johaneson, Wales & Sparre, 75 bls. from Oslo, 4,212 Hernosand, 5,375 Sundsvall and 125 Gothenburg; Mead, Patton & Co., 6,107 bls. from Gaspe, Can.; National City Bank, 1,300 bls. from Hamburg and 1,375 Sundsvall; Bulkley, Dunton & Co., 750 bls. from Hernosand, 4,150 Bremen, 800 Rotterdam, 678 Gothenburg, 3,625 Gefle, 1,250 Sundsvall, 500 Iggesund, 2,875 Stugsund and 250 Hamburg; J. Andersen & Co., 7,450 bls. from Hernosand, 135 Bremen, 1,110 Greaker, 4,000 Stugsund, 375 Gothenburg and 1,827 Hamburg; Tidewater Paper Mills Co., 6,601 bls. ground wood from Botwood, N. F., and 8,374 from Madeleine Gaspe, Can.; Brown Bros. & Co., 125 bls. from Swedish ports; Castle & Overton, 3,726 bls. from Bremen and 2,096 Antwerp; Borregaard Co., 3,216 bls. from Greaker; Central Union Trust Co., 275 bls. from Greaker and 253 Hamburg; M. Gottesman & Co., 665 bls. from Rotterdam, 1,500 Sundsvall and 2,400 Sebenico; Pagel, Horton & Co., 12,000 bls. from Husum and Domsjo and 2,250 Gefle; Nilsen, Lyon & Co., 1,143 bls. from Hamburg; Sanitary Textile Co., 268 bls. from Hamburg; Scandinavian Pulp Agency, 4,074 bls. from Sundsvall; Chemical National Bank, 600 bls. from Greaker; Buck, Kiaer & Co., 300 bls. from Greaker; Price & Pierce, 6,240 bls. from Gothenburg; Banca Commerciale Italiana, 700 bls. from Hamburg; Order, 1,644 bls. from Helsingfors, 2,706 Kotka, 6,575 Bremen, 525 Hamburg, 2,531 Skutskar and 1,280 Raumo.

Paper Stock

Despite a rather quiet market condition in nearly all grades, imports of papermaking material other than wood pulp into the United States continue on a fairly large scale, judging from unofficial statistics covering receipts during July. Rag imports kept up in good volume last month, though it is presumed principally against back orders, while old bagging was imported in unusually large quantity, and arrivals of old rope also were big.

Importations of papermaking rags in May, 1926, totaled 29,067,174 pounds, according to official figures issued by the U. S. Department of Commerce, showing a sharp decrease from the 52,125,222 pounds imported in April of this year, and also a loss from the 33,630,833 pounds imported in May, 1925. Imports of rags during the eleven months ended last May totaled 492,521,662 pounds, contrasted with 537,995,450 pounds in the corresponding period a year ago. Imports of old bagging and old paper in the eleven months ended May, 1926, aggregated 124,545,538 pounds, against 109,996,860 pounds in the preceding eleven months, and of old rope and miscellaneous paper stock were 68,732,779 pounds, compared with 75,668,648 pounds.

Imports of all kinds of paper stock through the port of New York in the month of July, 1926, these data being taken from manifests of steamers arriving at that port during the month, follow:

Old Rope

Brown Bros. & Co., 1,366 coils and 721 bls.; Ellerman's Wilson Line, 337 coils and 59 bls.; W. Schall & Co., 67 coils and 252 bls.; Union National Bank, 5 bls.; Stone Bros. Co., 18 coils and 3 bls.; Marx Maier Paper Mill Supply Corp., 57 bls.; S. Birkenstein & Sons, 50 coils and 65 bls.; Salomon Bros. & Co., 220 bls.; International Purchasing Co., 53 bls. and 58 coils; William Steck & Co., 66 coils; Bulkley, Dunton & Co., 143 bls.; Central National Bank, 112 coils; Daniel I. Murphy, Inc., 15 bls. and 8 coils; R. M. Gray, Inc., 35 bls. and 39 coils; National City Bank, 16 bls.; Order, 305 coils and 503 bls.

Old Bagging

Equitable Trust Co., 2,435 bls.; Guaranty Trust Co., 100 bls.; Central National Bank, 138 bls.; Star Bag & Pack Co., 60 bls.; Chase National Bank, 319 bls.; E. J. Keller Co., 808 bls.; Manufacturers Trust Co., 800 bls.; First Merchants National Bank of Richmond, 85 bls.; J. M. Johnston, 87 bls.; Marx Maier Paper Mill Supply Corp., 372 bls.; Stone Bros. Co., 117

"Distinguished for its high test and uniform quality."

IT IS the control of every factor relating to the manufacture of "Wyandotte Brand" that makes the Michigan Alkali Company unique in its field.

The raw materials, limestone and coal, come from Michigan-owned sources, on Michigan-owned ships, to the Michigan-owned salt-wells at Wyandotte; their quality at all times up to Wyandotte's high standards.

Tests are made at all stages of production. Michigan's laboratories have set rigid specifications.

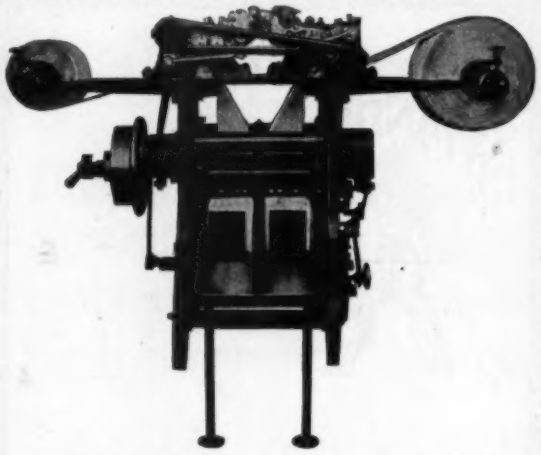
MICHIGAN ALKALI CO.

General Sales Department

21 East 40th St., New York, N. Y.

Chicago Office
332 South Michigan Ave.

Soda Ash Caustic Soda
Bicarbonate of Soda

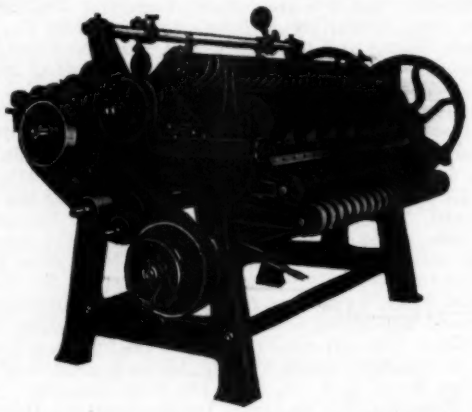


Napkin Folder with Printing Attachment

Adjustable for various size Napkins
Production 500 Napkins per Minute
Machine Ball Bearing Throughout

We also manufacture: Crepe Machines, Collapsing Reel, Rapid Toilet Rewinder, Pneumatic Bundling Press, Drum Winder and Special Machinery.

Hudson-Sharp Machine Co.
GREEN BAY, WIS.



PAPER CUTTERS

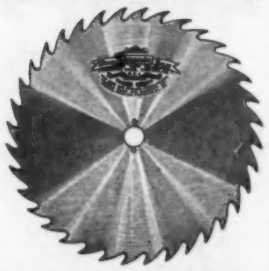
Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

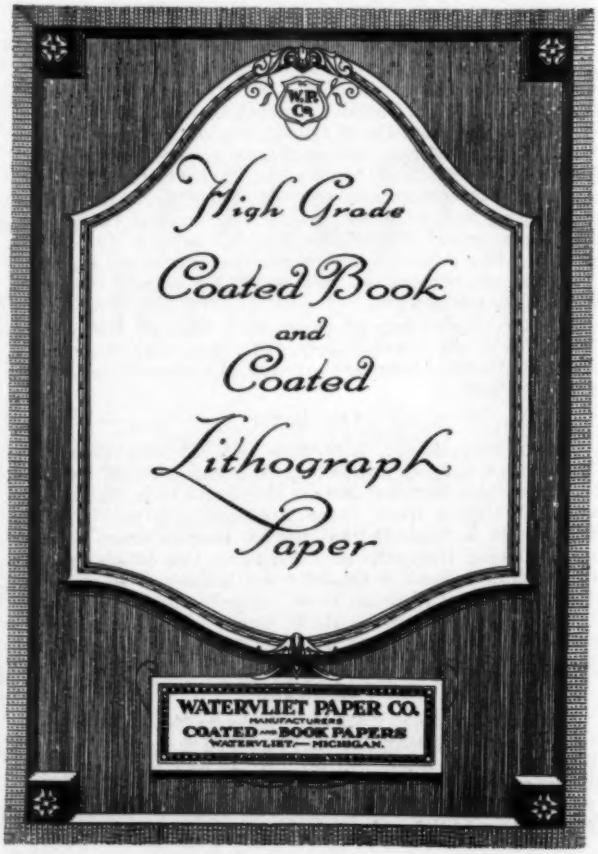
SIMONDS

Circular Saws and Machine Knives



For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.
Established 1832
Fitchburg, Mass. Chicago, Ill.



bls.; A. W. Fenton, Inc., 23 bls.; Anglo-South American Trust Co., 103 bls.; National Bank of Commerce, 58 bls.; Strupp & Co., 67 bls.; Philadelphia-Girard National Bank, 131 bls.; Smart & Toch, Inc., 45 bls.; Carolina Bagging Co., 100 bls.; Kidder Peabody Acceptance Corp., 64 bls.; Royal Manufacturing Co., 107 bls.; Darmstadt, Scott & Courtney, 121 bls.; Fidelity International Trust Co., 30 bls.; Salomon Bros. & Co., 172 bls.; J. Cohen, 100 bls.; Bulkley, Dunton & Co., 255 bls.; Maurice O'Meara Co., 44 bls.; Castle & Overton, 190 bls.; E. Butterworth & Co., 72 bls.; The Vacuum Co., 60 bls.; First Merchants National Bank of Richmond, 121 bls.; Goschens & Lunliffe, 26 bls.; Chatham Burlap Bag Corp., 300 bls.; Weil Bros., 63 bls.; Order, 374 bls.

Rags

American Wool Stock Co., 320 bls.; Darmstadt, Scott & Courtney, 150 bls.; S. Silberman Co., 1,980 bls.; Marx Maier Paper Mill Supply Corp., 593 bls.; J. Cohen & Sons, 47 bls.; Stone Bros. Co., 2,882 bls.; Albion Trading Co., 5 bls.; M. I. Hyman, 22 bls.; Daniel M. Hicks, Inc., 278 bls.; Atlas Waste Mfg. Co., 148 bls.; General Fiber Co., 52 bls.; E. Gross & Co., 43 bls.; Victor Galaup, Inc., 106 bls.; Robert Blank, 201 bls.; Katzenstein & Keene, 185 bls.; Cotton & Stupnicker, 6 bls.; A. H. Searle, Inc., 544 bls.; Hill Ingram Co., 12 bls.; E. Butterworth & Co., 307 bls.; Castle & Overton, 449 bls.; Royal Mfg. Co., 89 bls.; Maurice O'Meara Co., 145 bls.; Leshner Paper Stock Co., 294 bls.; Smark & Toch, Inc., 60 bls.; J. M. Jaffe, 48 bls.; J. M. Labor & Co., 18 bls.; G. W. Sheldon & Co., 46 bls.; R. F. Downing & Co., 65 bls.; Goschens & Cunliffe, 322 bls.; Atterbury Bros., 30 bls.; E. Mayer, 189 bls.; I. Horowitz, 41 bls.; Galante Bros., 28 bls.; Salomon Bros. & Co., 47 bls.; Paul Berlowitz, 573 bls.; Perry, Ryer & Co., 49 bls.; Perkins-Goodwin Co., 100 bls.; I. Hinerfeld, 45 bls.; E. J. Keller Co., 1,649 bls.; Bank of New York & Trust Co., 157 bls.; Baltimore Trust Co., 4 bls.; Chase National Bank, 2,807 bls.; Central National Bank of Cleveland, 715 bls.; National City Bank, 240 bls.; Union National Bank of Philadelphia, 142 bls.; State Bank, 171 bls.; New York Trust Co., 41 bls.; American Exchange-Pacific National Bank, 430 bls.; Guaranty Trust Co., 171 bls.; Equitable Trust Co., 135 bls.; Corn Exchange Bank, 22 bls.; Chemical National Bank, 271 bls.; National Bank of Commerce, 78 bls.; Grace National Bank, 285 bls.; Anglo-South American Trust Co., 114 bls.; Philadelphia-Girard National Bank, 21 bls.; American Overocean Co., 10 bls.; Goldman, Sachs & Co., 226 bls.; A. W. Fenton, Inc., 3,397 bls.; Brown Bros. & Co., 273 bls.; Kidder Peabody Acceptance Corp., 236 bls.; The Barrett Co., 550 bls.; C. R. Spence & Co., 154 bls.; Amsinck, Sonne & Co., 37 bls.; Amtorg Trading Co., 1,077 bls.; Milton Snedeker Corp., 121 bls.; Order, 4,813 bls.

Paper

Imports of paper into the United States during July, judging from unofficial data, were on a moderately heavy scale. Newsprint imports through the port of New York were a little larger than in the several previous months, and some good-sized shipments of wrapping, hanging, filter and other grades were received. A feature was the increase in arrivals of box board, particularly from Holland. Total imports of paper of all kinds into the United States in May, 1926, were valued at $10,218,927, according to official figures issued by the Department of Commerce, recording a decline of 20 per cent from the imports valued at $12,584,759 in the preceding month.

Imports of paper of all kinds through the port of New York during July, these data being taken from manifests of steamers arriving at that port last month, follow:

Printing

B. F. Drakenfeld & Co., 85 cs. from Liverpool; P. Puttmann, 45 cs. from Antwerp; J. P. Heffernan Paper Co., 44 bls. from Hamburg; Irving Bank-Columbia Trust Co., 224 bls. from Hamburg; C. B. Richard & Co., 56 rolls and 45 bls. from Hamburg; W. Hartman & Co., 289 bls. from Hamburg; F. L. Kraemer & Co., 6 cs. from London; Perry, Ryer & Co., 261 cs. from Glasgow and 53 cs. from Rotterdam; International Forwarding Co., 28 cs. from Antwerp; G. Gennert, Inc., 43 cs. from Havre; Borregaard Co., 838 reels from Gothen-

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Special felts to meet every condition.
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burg; Perkins-Goodwin Co., 11 cs. from Rotterdam and 36 cs. from Hamburg; Steiner Paper Corp., 157 cs. from Rotterdam; Heemsoth, Basse & Co., 6 cs. from Hamburg; Martin & Bechtold, 7 cs. from Bremen; Maurice O'Meara Co., 49 bls. from Kotka and 26 cs. from Hamburg; Bank of Montreal, 3,582 rolls from Corner Brook, N. F.; J. Gilman & Co., 169 reels from Hamburg; E. Dietzgen & Co., 5 cs. from Hamburg; P. C. Zuhlke, 131 cs. from Antwerp; Order, 909 reels from Wiborg, 8 bls. Hamburg, 1,538 reels, 311 bls. and 35 cs. Bremen, and 588 reels and 408 bls. Kotka.

Miscellaneous Paper Stock

Windsor Locks Paper Mills, 28 bls.; Amsinck, Sonne & Co., 50 bls.; Whaling Waste Products Co., 126 bls.; M. Steinberg & Son, 5 bls.; Salomon Bros. & Co., 111 bls.; Maurice O'Meara Co., 555 bls.; Anglo-South American Trust Co., 42 bls.; E. J. Keller Co., 553 bls.; J. Cohen & Sons, 7 bls.; S. Reubens & Bros., 54 bls.; Order, 919 bls.

Wrapping

Irving Bank-Columbia Trust Co., 45 rolls from Antwerp and 28 bls. from Hamburg; F. C. Strype, 16 rolls from Antwerp; National City Bank, 79 bls. from Rotterdam; National Consolidated Paper Corp., 6 bls. from Rotterdam; Steiner Paper Corp., 58 bls. from Greaker; Royal Bank of Canada, 50 bls. from Genoa; Blauvelt-Wiley Paper Mfg. Co., 46 bls. from Glasgow and 39 rolls from Gothenburg; Robert Wilson Paper Corp., 30 reels from Glasgow; Wilkinson Bros. & Co., 15 rolls from Gothenburg; International Forwarding Co., 18 cs. from Hamburg and 32 cs. from Rotterdam; Baer Bros., 2 cs. from Hamburg; Schenkers, Inc., 30 cs. from Hamburg; Okonite Callendar Cable Co., 321 reels from Havre; Hensel, Bruckman & Lorbacher, 5 cs. from Hamburg and 25 cs. from Rotterdam; International Acceptance Bank, 51 bls. from Hamburg; Borregaard Co., 194 bls. and 1,446 rolls from Gothenburg; E. Dietzgen & Co., 62 cs. from Rotterdam and 6 cs. from Hamburg; Rohner, Gehrig & Co., 56 cs. from Hamburg; Zellerbach Paper Co., 33 cs. from Rotterdam; Arkell Safety Bag Co., 198 rolls from Gothenburg.

Cigarette

P. J. Schweitzer, 21 cs. from Havre and 160 cs. from Marseilles; British-American Tobacco Co., 10 cs. from Liverpool and 55 cs. from Havre; American Tobacco Co., 1,700 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 3,020 cs. from St. Nazaire; DeManduit Paper Corp., 691 cs. from St. Nazaire; Surbrug Co., 15 cs. from Havre; Liggett & Myers Tobacco Co., 17 cs. from Bordeaux; Standard Products Corp., 592 cs. from Havre; M. Spiegel & Sons, 4 cs. from Bordeaux and 18 cs. from Hamburg.

Writing

Guibont Freres & Co., 29 cs. from Havre and 14 cs. from Southampton; J. C. Robold & Co., 19 cs. from London; Sternberg & Co., 10 cs. from Southampton; E. Dietzgen & Co., 26 cs. from Havre; Keuffel & Esser Co., 6 cs. from Havre; Syndicate Trading Co., 6 cs. from Liverpool; A. Price & Son, 66 cs. from Rotterdam; Order, 14 cs. from Havre.

Drawing

H. Reeve Angel & Co., 2 cs. from London and 9 cs. from Southampton; International Forwarding Co., 2 cs. from London; Keuffel & Esser Co., 90 cs. and 215 rolls from Hamburg, 16 cs. from Southampton and 23 cs. from Rotterdam; Order, 4 cs. from London.

Filter

H. Reeve Angel & Co., 32 cs. from London and 30 bls. from Southampton; C. Sleicher & Scholl Co., 4 cs. from Hamburg; G. Lueders & Co., 10 bls. from Bordeaux; A. Giese & Son, 11 bls. from Bordeaux and 2 cs. from Hamburg; E. Fougera & Co., 55 cs. from Bordeaux; J. Manheimer, 129 bls. from Southampton.

Tissue

S. Gilbert, 24 cs. from Rotterdam; F. C. Strype, 17 cs. from Liverpool; C. A. Johnson & Co., 6 bls. from Liverpool; J. B. Mast & Co., 3 cs. from Genoa; R. H. Macy & Co., 5 cs. from

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ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

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Genoa; Rieser & Co., 5 cs. from Kobe; Iwai & Co., 4 cs. from Kobe.

Hanging

C. A. Haynes & Co., 32 bls. and 9 cs. from London and 49 cs. from Southampton; Richard Shipping Corp., 2 cs. from Kobe; F. J. Emmerich & Co., 4 cs. from Southampton, 5 cs. Bremen, 3 bls. Liverpool and 3 bls. from Hamburg; G. J. Hunken & Co., 8 bls. from Hamburg; A. C. Dodman, Inc., 8 cs. from Havre and 14 bls. from Southampton; W. H. S. Lloyd & Co., 3 cs. from Liverpool; A. L. Zabrieski, 20 reels from Hamburg; Bendix Paper Co., 70 cs. from Hamburg; Order, 251 reels from Hamburg.

Photo

Gevaert Co. of America, 82 cs. from Antwerp and 75 cs. from Rotterdam; Globe Shipping Co., 19 cs. from Rotterdam and 49 cs. from Bremen; P. C. Zuhlke, 23 cs. from Rotterdam; International Acceptance Bank, 14 cs. from Hamburg; P. Puttmann, 50 cs. from Antwerp; J. J. Gavin & Co., 3 cs. from Liverpool.

Board

First National Bank, 357 rolls from Rotterdam; Adrian Vuyck, 2,717 rolls from Rotterdam; Metropolitan Import & Mfg. Co., 119 cs. from Hamburg; O. M. Maxter, Inc., 40 cs. from Gothenburg; Lowy & Lowy, Inc., 13 bls. from Gothenburg; Premier Flour Co., 91 cs. from Hamburg; Fibre Case & Novelty Co., 86 bls. from Gothenburg; Schiffenhaus Bros., 200 reels from Rotterdam; G. W. Sheldon & Co., 30 cs. from Hamburg; Haas Bros., 230 rolls from Rotterdam; Perkins-Goodwin Co., 57 rolls from Rotterdam; State Bank, 410 rolls from Rotterdam; Bendix Paper Co., 85 cs. from Hamburg; Thompson & Norris Co., 220 rolls from Rotterdam; Order, 75 bls. from Hamburg and 309 reels from Rotterdam.

Miscellaneous

Japan Paper Co., 24 cs. from Havre, 2 cs. Gothenburg, 14 cs. Rotterdam, 7 cs. London and 94 cs. from Genoa; R. F. Downing & Co., 5 cs. from Havre; Corn Exchange Bank, 37 cs. from Kobe; Borden & Riley Paper Co., 10 cs. from Antwerp; H. Reeve Angel & Co., 5 cs. from Yokohama and 4 cs. from London; Whiting-Patterson Co., 19 cs. from Southampton and 40 cs. from Hamburg; Fuchs & Lang Mfg. Co., 50 cs. from Canton; M. J. Corbett & Co., 16 bls. from Liverpool; Phoenix Shipping Co., 3 cs. from Hamburg; Coenca-Morrison Co., 3 cs. from Hamburg and 7 cs. from Havre; F. C. Strype, 170 cs. from Hamburg and 4 cs. from Rotterdam; Maurice O'Meara Co., 16 bls. from Hamburg; Birn & Wachenheim, 4 cs. from Laguayra and 6 cs. from Antwerp; Barnhard Neiress, 15 cs. from Canton; C. A. Johnson & Co., 82 bls. from Liverpool; J. Raber, 7 cs. from Bristol; Louis DeJonge Co., 7 cs. from Antwerp; Herrmann Paper Co., 13 cs. from Hamburg; Arnold Constable & Co., 3 cs. from Havre; P. H. Petry & Co., 10 cs. from Hamburg and 9 cs. from Rotterdam; E. Dietzgen & Co., 32 cs. from Hamburg; Brown Bros. & Co., 12 cs. from Hamburg; Ladenburg, Thalman & Co., 23 cs. from Hamburg; Globe Shipping Co., 10 cs. from Rotterdam; Charles W. Williams & Co., 15 cs. from Antwerp; Cunard Steamship Co., 8 cs. from Liverpool; D. C. Andrews & Co., 72 cs. from Hamburg; Quality Art Novelty Co., 10 cs. from Havre; International Acceptance Bank, 39 cs. from Rotterdam; Montes y Legenne & Co., 12 cs. from Rotterdam; Bernard, Judae & Co., 6 cs. from Gothenburg; Perry, Ryer & Co., 10 cs. from Bremen; Keller-Dorian Paper Co., 30 cs. from Southampton; Independent Forwarding Co., 3 cs. from Havre; International Forwarding Co., 10 cs. from Hamburg and 4 cs. from Havre; Public National Bank, 17 cs. from Bordeaux; Janeway & Carpenter, 74 reels from Hamburg.

Allen Abrams has resigned as chemist with the Cornell Wood Products Company, Cornell, Wis., to take the position of chief chemist with the Marathon Paper Mills Company, Rothschild, Wis.

Dr. Emil Heuser, director of the research laboratory of the United Silk Mills of Elberfeld, Seehof, near Berlin, will enter the service of Riordon Pulp Corporation, Hawkesbury, Ont., late this year.

The Champion Coated Paper Co., Hamilton, Ohio, Largest Coated Mill in the country, extensive users of Dayton High Speed Beater Equipment.

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Nineteen Dayton High Speed Beaters are today doing more and better beating at "The Champion" than was formerly possible with forty-nine beaters of the Holland type. Exhaustive data attained from the management at Hamilton, shows in detail the extent and importance of the benefits derived. Write for it.

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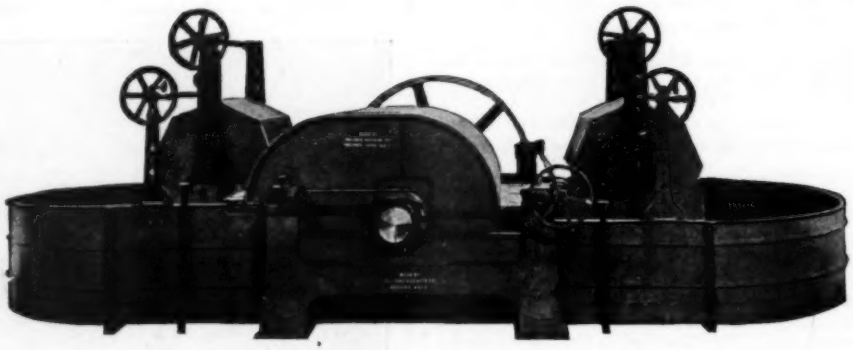

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Improved Rotary Bleaching Engine

Economy in operation is shown by its low consumption of power, and the short time necessary for good results.

For instance—the 14' New Biggs Bleaching engine finishes up a 4-ton batch at average density in one hour, using only 6 to 8 horsepower depending on condition.

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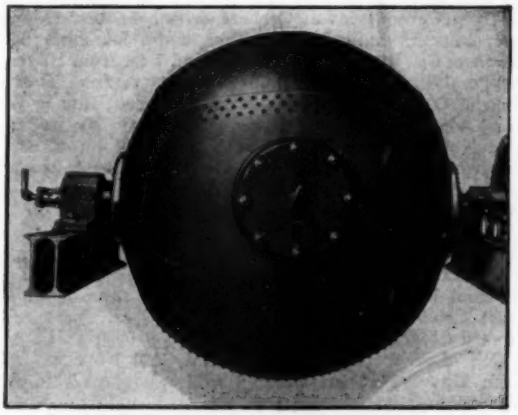

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3. Saves chlorine bleaching compound.
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